DOCUMENT RESUME

ED 081 436 LI 004 439

TITLE	Medical Information Network for Ontario: Determination of Need.
INSTITUTION	University of Western Ontario, London. School of Library and Information Science.
SPONS AGENCY	Ontario Dept. of Health, Toronto.
PUB DATE	73
NOTE	398p.; (70 references)
EDRS PRICE	MF-$0.65 HC-$13.16
DESCRIPTORS	*Hospitals; Information Needs; *Information Networks; *Information Seeking; Institution Libraries; Medicine; *Physicians; Professional Continuing Education; Questionnaires
IDENTIFIERS	*Canada

ABSTRACT

This report documents the findings of a study into the information-seeking behavior of allied health personnel in a three county region in Ontario and also a survey of the resources and services which already exist to satisfy the information needs of these people. The study was undertaken for the purpose of gathering decision-making information prior to the establishment of a medical library network in Ontario. The medical network as envisioned by the Committee would fulfill three functions: (1) Allow a health worker to ask a single query to set the whole retrieval function into operation, (2) Integrate, where possible, special collections and services within the province into the system, and (3) Have, as central resource, federal health library services, which would provide access to MEDLARS and other international information resources. The constantly changing nature of health care patterns makes it imperative that good library service be available to all people involved, either directly or indirectly, in the care of patients. The proposed information network would aim to provide quick and effective service to all health personnel in the province of Ontario. The network would comprise three levels of responsibility: the primary contact library, the health resource library, and the central resource. (Author/SJ)

FILMED FROM BEST AVAILABLE COPY

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY
William J. Cameron
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER"

ED 081436

MEDICAL INFORMATION NETWORK FOR ONTARIO

DETERMINATION OF NEED

Demonstration Model Grant D. M. No. 27
Ontario Department of Health

School of Library and Information Science
UNIVERSITY OF WESTERN ONTARIO
London, Canada

LI 004 439

COPYRIGHT
©
THE SCHOOL OF LIBRARY & INFORMATION SCIENCE

The University of Western Ontario

London, Canada

1973

MEDICAL INFORMATION NETWORK FOR ONTARIO

DETERMINATION OF NEED

PREFACE

The publication of the formal report on the results of a research project is always an occasion to look back over the history of the project and to speculate about its implications.

As Program Coordinator of Phase I of the "Medinform" project, I shall confine myself to a survey of the wide variety of contributions made over the past three years by a very large number of people. One cannot hope, of course, to single out every contribution of significance in such a complex operation, but on behalf of the School of Library and Information Science at the University of Western Ontario, I would like to express thanks to all those who made this report possible.

On June 16, 1970, an informal meeting was held in the School at the request of the Ontario Council of Health Committee on Library Services to discuss the implications of the report of the Ontario Council of Health on Library Services, "Annex E", June 1969. Representatives of the Ontario Council of Health and of the Health Sciences Library Committee of the University of Western Ontario met with representatives of the School and as a result of the discussion, approval was given in principle at a meeting of the Health Sciences Library Committee on July 9 for a pilot Regional Health Services Network Project to be centred on the University of Western Ontario. At that meeting, an ad hoc sub-committee of the Health Sciences Library Committee and the School of Library and Information Science was formed to identify the general details of the project and to act as a Steering Committee. Medinform owes a debt of gratitude to that sub-committee for its continuing advice and encouragement.

The Health Sciences Library Committee was represented on the Steering Committee by Dr. W.S. Hunter, Paediatric Dentistry, Dr. O.H. Warwick, Vice-President, Health Sciences, Dr. R.E. Lee, University Librarian, and Miss Anne Seheult, Health Sciences Librarian; the School of Library and Information Science was represented by myself and Professor G.R. Pendrill. Dr. Hunter and I were asked to act as co-Chairmen.

This Steering Committee also included at a later date Professor J.H. Mantle, Nursing, and Mr. J.F. Macpherson, Libraries. Contributions of Professor Pendrill and Miss Seheult during the development stage of the specific proposal for a Demonstration Model Grant of the Ontario Department of Health deserve special acknowledgement. The provision of factual information and technical support by the Research and Planning Branch of the Ontario Department of Health must also be acknowledged, especially the services of Dr. J.R. Smiley, Senior Research Officer in that branch.

In November, 1971, a grant (Demonstration Model Grant DM 27) was made by the Ontario Department of Health under the Ontario Health Resources Development Plan to enable us to mount Phase I of the project. The initial grant was for the period December 1, 1971, to March 31, 1972. A continuation grant was made for the period April 1, 1972, to June 30, 1972. To help us cope with unforseen circumstances during the data collection period, this continuation grant was then extended to March 31, 1973. Thus, the work of Phase I falls roughly into two periods, December 1, 1971, to June 30, 1972, and July 1, 1972, to March 31, 1973. During the first period, Professor G.R. Pendrill served as Project Director through half-time secondment from his position as professor in the School of Library and Information Science. Miss Vicky Man served as full-time Research Assistant. Dr. J.M. Tague, professor in the School, and Dr. J.M. Wanklin, Community Medicine, provided helpful advice on statistical techniques, and Mr. W.H. Hudgins, Computer Specialist in the School, gave freely of his services in data processing.

During and prior to this first period, several students within the School contributed to the work of the project, in particular Mr. David Jones and Miss Judy Sidlofsky who undertook preliminary research work under the direction of Professor Pendrill. Mrs. Nancy Stuart contributed both as a student and later as a lecturer in the School to both preliminary research and to a review of the results of that preliminary research.

During the second period, Dr. Elaine Svenonius, who joined the School as Assistant Dean on July 1, 1972, assumed responsibility of the general direction of the project, with special emphasis on analysis of the data already collected and writing of the reports based on the analysis. She was assisted by Professor Pendrill as Consultant during July, August, and September, by Dr. E.E. Olson (Visiting Professor in the School from the University of Maryland) as Consultant

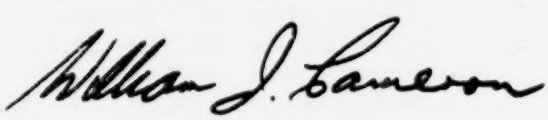
during July and August, by Mrs. Vicky Mok (nee Man) as full-time Research Assistant from July to December, and by Ms. Heidi Sivertz as full-time Research Assistant during January to March, 1973. Ms. Mary Westell, a student in the School, assisted in the analysis of questionnaire data and the reporting of findings. Ms. Barbara Bruser, also a student in the School, undertook the interviewing reported in Chapter VI. Mrs. Nancy Stuart continued to give support by visiting libraries and by bringing her continued experience to bear on the development of the project. Mr. Mike Nelson, Computer Specialist in the School, and Mr. Hudgins, contributed significantly to statistical analysis and programming for the computer. Professor S.D. Neill assisted, at the end of this period, with criticism and comment on the report writing.

Outside the School, Miss Seheult and one of her library staff, Mrs. Eva Borda, provided advice and acted as consultants on the development of the Union List of Periodical Holdings in hospital libraries in the Study Region. Dr. J. M. Wanklin, Community Medicine, continued to provide very helpful advice on statistical analysis.

All members of the research team owe a great debt of gratitude to the cooperation of health workers in the project area and have continually expressed their delight with the spirit of cooperation, understanding, and interest shown by all librarians and information workers in the field.

As Program Coordinator, I am especially grateful to those who have taken the day-to-day burden of administration of the project. Mrs. Betty McCamus, Administrative Officer in the School, has dealt with all budget and accounting arrangements with great goodwill and tact. Professor D.D. Sudar has acted as Editorial Assistant on behalf of the Publications Committee of the School. Above all, I wish to thank Professor Pendrill for his role in research and questionnaire design and data collection, and Dr. Svenonius for her role in organizing the data analysis and report writing.

Throughout the whole complex operation we have always enjoyed the willing cooperation and helpful suggestions of the Research and Planning Branch of the Ontario Department of Health, the University's Research Officer, Dr. H.W. Baldwin, the Health Sciences Library Committee, and individual members of the now disbanded Committee on Library Services of the Ontario Council of Health.



William J. Cameron
Dean,
School of Library and
Information Science.

April 2, 1973.

TABLE OF CONTENTS

Page

PREFACE ii

LIST OF TABLES vii

LIST OF ILLUSTRATIONS xi

SUMMARY CONCLUSIONS xii

Chapter

I. INTRODUCTION 1

II. METHODOLOGY FOR THE QUESTIONNAIRE SURVEY 9

III. RESPONSE RATES AND INFORMATION ABOUT THE RESPONDENTS 39

Study Region
Sampling Frame
Determination of Sample Size
The Questionnaire

IV. INFORMATION-SEEKING BEHAVIOUR 57

Hospital Sample (Paramedical Personnel): Overview
Hospital Sample (Paramedical Personnel): By Size
Hospital Sample (Paramedical Personnel): By Type
Hospital Sample (Paramedical Personnel): By Place
Hospital Sample (Paramedical Personnel): By Profession
Semi-institutional Sample: Overview
Semi-institutional Sample: By Profession

Chapter Page

Self-employed Sample
Summary Conclusions
Comment

V. CONTINUING EDUCATION 96

Hospital Sample (Paramedical Personnel): Overview
Hospital Sample (Paramedical Personnel): By Hospital Size
Hospital Sample: By Professional Groups
Semi-institutional Sample
Self-employed Sample
Comments
Conclusion

VI. SPECIFIC CLINICAL INFORMATION NEEDS OF MEDICAL DOCTORS: A PILOT STUDY 121

Questionnaire
Interviews
The Interview Questions
Analysis
General Comments by the Physicians

VII. ANALYSIS OF HOSPITAL LIBRARIES' RESOURCES AND SERVICES 143

Personnel
Objectives
Physical Facilities
Services
Collections

Appendixes

A. DESCRIPTION OF HEALTH PROFESSIONS. 172

Paramedical Health Workers in Hospitals
Pharmacists, Health Unit Personnel, and School Board Health Workers
Professional Health Workers in Private Practice

B. UNION LIST OF PERIODICAL HOLDINGS IN THE 14 HOSPITAL LIBRARIES. 219

LIST OF TABLES

Chapter II

Table		Page
1.	Public Hospitals Included in the Sample	20
2.	Population and Sample Sizes by Professional Categories (Hospital Sample).	27
3.	Population and Sample Sizes by Professional Categories by Hospital Size (Hospital Sample) . .	28
4.	Population and Sample Sizes (Nonhospital Sample)	30

Chapter III

Table		Page
1.	Response Rates	40
2.	Background Information about Respondents (Hospital Sample)	44
3.	Background Information about Respondents (Semi-institutional Sample)	48
4.	Background Information about Respondents (Self-employed Sample).	52
5.	Qualifications Other than the M.D. or D.D.S. (Self-employed Sample)	53

Chapter IV

Table		Page
1.	Information Sources Used for Current Awareness (Hospital Sample)	59
2.	Action Taken to Obtain Needed Information (Hospital Sample)	61

Table		Page
3.	Library Services Likely to be Used for Work-Related Information (Hospital Sample)	64
4.	Differences in Information-Seeking Behaviour Among Personnel in Small, Medium and Large Hospitals (Hospital Sample)	66
5.	Library Use of Small, Medium and Large Hospital Libraries Cross-Classified According to General-Special and London-Country (Hospital Sample). . .	68
6.	Use of Library Compared with Use of Human Resources in London and Country Samples (Hospital Sample)	71
7.	Library Services Likely to be Used for Work-Related Information (Hospital Sample)	73
8.	Percentages Judging Superiors the Most Effective Source of Current Awareness Information (Hospital Sample)	76
9.	Library Services Likely to be Used for Work-Related Information by Autonomous and Non-Autonomous Hospital Personnel (Hospital Sample)	78
10.	Information Sources Used for Current Awareness (Semi-institutional Sample)	81
11.	Action Taken to Obtain Needed Information (Semi-institutional Sample)	83
12.	Library Services Likely to be Used for Work-Related Information (Semi-institutional Sample) .	84
13.	Action Taken to Obtain Needed Information (Self-employed Sample).	89
14.	First Step in Action Taken to Obtain Needed Information (Self-employed Sample).	90
15.	Library Services Likely to be Used for Work-Related Information (Self-employed Sample).	91

Chapter V

Table		Page
1.	Continuing Education by Use of Library and Books Required (Hospital Sample)	97

Table		Page
2.	Use of Library, Books Required and Borrowing of Books - Comparison of those Enrolled in Continuing Education Courses and Those not Enrolled in Courses (Hospital Sample)	99
3.	Use of Library at Place of Employment and Subjective Evaluation of its Worth (Hospital Sample)	100
4.	Library Services Likely to be Used for Work-Related Information (Hospital Sample)	102
5.	Percentages Enrolled in Continuing Education Courses, Books Required and Use of Library by Size of Hospital (Hospital Sample).	103
6.	Continuing Education, Books Required and Use of Library in Small, Medium and Large Hospitals (Hospital Sample)	105
7.	Borrowing of Books by Those Enrolled in Continuing Education Courses (Hospital Sample) . .	107
8.	Borrowing of Books by Those Not Enrolled in Continuing Education Courses (Hospital Sample)	108
9.	Continuing Education, Books Required and Library Use by Profession (Hospital Sample)	109
10.	Library Use by those in Continuing Education Courses Compared to Those not Enrolled in Courses (Hospital Sample)	111
11.	Use of the Library, Books Required, and Borrowing of Books by Those Enrolled in Continuing Education Courses, Compared to Those not Enrolled (Semi-institutional Sample)	112
12.	Continuing Education, Use of Library, Books Required and Borrowing of Books by Profession (Semi-institutional Sample)	113
13.	Percentages Enrolled in Continuing Education Courses by Profession (Self-employed Sample). .	115

Chapter VI

Table		Page
1.	Classification of Information and Number of Requests in each Category	124
2.	Number of Physicians in each Category	128
3.	Classification of Information Needs from Interviews	132
4.	Examples of Information Needs	133

Chapter VII

Table		Page
1.	Personnel in the 14 Hospital Libraries	149-50
2.	Primary Clientele of the 14 Hospital Libraries	152
3.	Description of Libraries' Classification Schemes and Catalogs	162
4.	Number of Monographs and Journals in Hospital Libraries	164
5.	Projected Minimum Number of Books and the Actual Number of Books Found in the 14 Hospital Library Collections	165
6.	Projected Minimum Number of Journal Titles and the Actual Number of Journal Titles found in the Hospital Library Collections	166

Appendix B

Table		Page
1.	Analysis by Subject of the Hospital Libraries' Collections	256-57

LIST OF ILLUSTRATIONS

Figure		Page
1.	Map of the Study Region, showing the counties of Oxford, Elgin and Middlesex . . .	10
2.	First Stratification of the Population . . .	18

SUMMARY CONCLUSIONS

1. Background Of 1505 questionnaires distributed to allied health personnel in the counties of Middlesex, Elgin and Oxford, 1071 were returned giving a response rate of 71.2%. A significant distinguishing characteristic in the backgrounds of the respondents is whether or not they are employed in hospitals. Generally hospital health workers are younger and less educated than their professional counterparts working alone or in informally structured environments. They are less apt to have professional qualifications or to belong to professional organizations.

2. Current Awareness Information In studying the information-seeking behaviour of allied health personnel it was found that superiors, colleagues and periodicals are the sources usually used for current awareness information. Paramedical personnel working in hospitals feel that they learn more about new developments in their field from their superiors than from the reading of periodicals. While colleagues are a usual source of current awareness, they are thought relatively ineffective in providing it. There is more professional isolation and consequently less dependence upon superiors for current awareness information by health workers not associated with hospitals. These people tend to rely to a considerable extent on professional organizations to keep them updated.

3. Information for a Particular Purpose Looking information up in a book is the most frequently cited means of obtaining information to satisfy a particular need. Generally this is the first step taken in an information search. Paramedical personnel in hospitals are an exception; more often they turn first to a colleague for help. One action which is decidedly not taken when information is needed is to go to a library. Only 2% of the health personnel

surveyed thought to go immediately to a library when they last needed information. The fact that books are so often referred to and libraries are so seldom visited suggests that the books used are not found in libraries but are housed in private offices or departmental collections.

4. Use of the Library Despite the fact that so few of the respondents report going to a library first to find specific information, a good number of them have at least made some use of the library where they work. More use of the library is made by paramedics in small hospitals than in large hospitals. One reason for this, suggested by the data, is that in small hospitals information is more likely to be sought in print form since there are fewer superiors and colleagues, that is, fewer human resources to depend upon. It was hoped that distinguishing between country hospitals, which have fairly poor library resources, and London hospitals, which have comparatively better resources, would show that London hospital libraries were used more. Unfortunately, no significant differences were found between the use of hospital libraries by health workers in the country and in London, thus questioning the common assumption that where resources exist they are used.

5. Preferences in Library Services The library service most likely to be used for work-related information is, not surprisingly, the borrowing of books and periodicals. The borrowing of tapes and films is popular among paramedical personnel in hospitals and takes precedence over using reference materials in the library. Outside the hospital there is considerably less interest in borrowing audio-visual materials, and a much greater interest in SDI and telephone enquiry services. The predominate interest of Doctors and Dentists is for print materials.

6. Preference for Location of Library Services For Doctors and paramedical personnel in hospitals the preferred location for an information service is the local hospital. Health personnel associated with small institutions such as school boards and health units as well as Dentists and Pharmacists would prefer to see an information service located in a public library.

7. Continuing Education Doctors and Dentists do not for the most part involve themselves in programmes of continuing education (10 to 20%), and, when they do, they do not depend especially on library resources. Somewhat over a third of the other professionals surveyed actively participate in programmes of continuing education. For paramedical personnel working in hospitals there is a positive correlation between participation in continuing education courses and the use of the library.

8. Information Needs of Doctors Often Doctors need information immediately, such as answers to questions about drug dosage and symptom significance. There is some doubt among Doctors as to whether or not such information could be easily obtained in a library. Non-use of the library by Doctors, however, is also a function of simply not having time. The most overriding concern of Doctors interviewed was the difficulty of keeping up to date in their own field and knowledgeable enough in peripheral fields. All said that they would like to be able to phone a library and ask for five or six articles on the latest developments in a certain field, and have the photocopies on their desks the next day.

9. Hospital Library Resources and Services Of the fourteen hospital libraries surveyed only one meets the minimum standards proposed in Annex E for the following categories of operation: Personnel, Objectives, Services, Collection and Physical Facilities. Many of them are so small as to be no more than unattended reading rooms. There is only one professional medical librarian employed in the fourteen libraries and she works only half time. While four of the libraries meet and even exceed minimum standards for collections of books and periodicals, the other ten fall far below. To bring a typical one of these ten libraries up to standard in a two year period, 186 books and 35 journal subscriptions would be required.

10. Implications for a Network Presently the library does little to serve paramedical personnel working in hospitals. Many of these personnel are nonautonomous and they expect their superiors to fulfill information-providing functions. It can be asked where their superiors, the so-called "gatekeepers", obtain their information. The chief gatekeepers, the Doctors, make little use of the library in that they simply do not have time to seek for information beyond what they can obtain quickly from colleagues or in reference books and periodicals in their private collections.

The implications for the future success of a network are obvious. A network will not be cost effective if no effort is made to change present patterns of information-seeking behaviour. A possible means of changing this behaviour is to introduce programmes of continuing education. To date the library's role in actively supporting such programmes has been minimal. A network might be viewed as a catalyst to change - change in the information-seeking behaviour of allied health personnel and change in the role of the library, with the ultimate objective of improving health care service and contributing to national development.

CHAPTER I

INTRODUCTION

This report documents the findings of a study into the information - seeking behaviour of allied health personnel in a three county region in Ontario and also a survey of the resources and services which already exist to satisfy the information needs of these people. The study, sponsored by the Ontario Ministry of Health, was undertaken for the purpose of gathering decision-making information prior to the establishment of a medical library network in Ontario. The original suggestion for such a network was made in June 1969 by the Committee on Library Services of the Ontario Council of Health. This suggestion was embodied in the Report of the Ontario Council of Health on Library Services,[1] also referred to as "Annex E".

The medical network as envisioned by the Committee would fulfill three functions:

---

[1] Report of the Ontario Council of Health on Library Services, "Annex E" (Ontario Department of Health, June, 1969).

1. Allow a health worker to ask a single query to set the whole retrieval function into operation, regardless of who or where he may be.

2. Integrate, where possible, special collections and services within the province into the system.

3. Have, as Central Resource, federal health library services, which would provide access to MEDLARS and other international information resources.[2]

The constantly changing nature of health care patterns makes it imperative that good library service be available to all people involved, either directly or indirectly, in the care of patients. The proposed information network would aim to provide quick and effective service to all health personnel in the province of Ontario. It was felt by the Committee that efficient service would act as a motivating force for people to use the network.[3]

• The network proposed by the Committee on Library Services would comprise three levels of responsibility:

1. the primary contact library

2. the health resource library, usually a medical school

3. the central resource (the Bibliographic Centre for the Medical and Health Sciences at the National Science Library, Ottawa)

A Primary Contact Library (PCL) might be the library of the health worker's own institution, the library of an institution or association with which the health worker is connected, or the nearest library which can give effective

---

[2] Ibid., p. 9.

[3] Ibid., pp. 10-11.

information service. The following are the different types of medical libraries involved:

1. Basic health information units (general hospitals, public health services).
2. Research and teaching libraries (health science centres, teaching hospitals, research institutes).
3. Professional association libraries (the libraries of associations such as the Canadian and Ontario Medical Associations, Canadian Dental Association, Registered Nurses' Association of Ontario, Medical Academies, etc.).[4]

It is expected that for the majority of users the PCL's would normally, though not necessarily, be the first point of access to the network.

The Health Resource Library (HRL) would discharge a a multiplicity of functions. In addition to serving as a primary contact library for the members of its own academic institution, it would effect co-ordination between the other PCL's in its designated region and would act as a link to other HRL's in the province, and to the National Science Library. It would, moreover, act as a PCL for direct access by health care personnel working in isolated areas of the region.

The Central Resource Library (the National Science Library) would serve as a back-up service by providing materials, bibliographic assistance, and access to the international information network.

---

[4] Ibid., pp. 20-21.

The network would try to achieve an 85% level of adequacy of service using only the provincial resources, and for a 95% level when working in conjunction with the National Science Library.[5] With the increasing inter-disciplinary nature of the health sciences it would be necessary for the libraries in the network to promote liaison on a reciprocal basis with other information sources in the province and throughout the nation.

The "Annex E" report contains recommendations as well for the stock, staff, and services of different kinds of libraries. Standards are proposed for physical facilities, services, and training of personnel. Estimates are given of the total number of staff required for the network in Ontario, which amounts to 90-125 professional librarians, 180-220 technicians, and 190-220 assistants.[6] The estimate given for the total number of users of the network is 112,583. This figure includes 61,351 physicians, nurses and dentists, 17,854 students, plus 33,378 workers from the allied health disciplines.[7]

The Committee felt it was important to make use of existing resources in establishing the network. The present resources would be organized and expanded for optimum use.[8]

---

[5] Ibid., p. 31.

[6] Ibid., pp. 74-76.

[7] Ibid., p. 46.

[8] Ibid., p. vii.

The Committee points out that for the network to operate effectively, many libraries would have to want to participate; they could not be compelled to share their resources with other libraries. This means that their co-operation would have to be actively sought.[9]

Organization of the network would be effected through a Provincial Co-ordinator heading a unit within the Ontario Ministry of Health, and by regional co-ordinators located in the five health sciences libraries acting as HRL's for the regions. A network operating and co-ordinating committee would be formed, comprised of the chief librarians of the HRL's and other appropriate persons under the chairmanship of the Provincial Co-ordinator. This is in accordance with the practice already established by Ontario universities for similar purposes of library co-operation.[10] During the implementation phase, and subsequently, a review and advisory commitee would oversee the project in order to evaluate, to make suggestions for development, and to give advice to the Ontario Council of Health.[11] A group of librarians in each regional unit would provide advice and assistance to network libraries and also to health sciences information centres outside the network.[12]

---

[9] Ibid., p. 41.

[10] Ibid., p. 40.

[11] Ibid., p. 41.

[12] Ibid., pp. 29, 73.

In the beginning stages of the network, communications would be based on an "Inward WATS" telephone service at the local level and Telex at the HRL level. While a province-wide, on-line computer file interrogation system is seen as a future possibility, the Committee did not believe that this would be practicable without a very thorough investigation to ensure general compatibility of bibliographic records and computer systems. However, it did recommend that certain preliminary steps be taken toward this ultimate objective by agreement on a machine-readable catalogue system and the exchange of compatible bibliographic records between the HRL's.[13]

The Commitee on Library Servies felt that the proposed system would be a dynamic one and would require constant evaluation and feedback, especially in the formative stages. Further, it proposed a small-scale trial:

> to test the feasibility of the proposed information system, demonstrate specific aspects of its operation, and indicate the probable parameters of demand for the information service it provides. ... Such projects could serve to work out the basic principles of the ... network, identifying problems calling for solutions, and demonstrate specific aspects (e.g. financial implications)."[14]

In March of 1971 in response to the "Annex E" Report, the School of Library and Information Science of the University of Western Ontario proposed a three-phase pilot

---

[13] Ibid., pp. 29-34.

[14] Ibid., p. 40.

project.[15] Taking as its study region the three counties of Middlesex, Elgin, and Oxford, the School proposed to:

Phase I: survey known and latent information needs of health workers in the area, and survey and evaluate the resources and services already available for satisfying those needs,

Phase II: develop an information network from existing resources and services based on standards derived from the investigation in Phase I, and from ongoing surveys and evaluation,

Phase III: vary experimentally either the resources or services in parts of the network in order to measure their effect on the operation of the network as a whole and on the information needs of the health workers in the area.

Funding for Phase I was granted in November of 1971, and the results of information gathered during the course of this phase form the subject of the following report.

Various methods were used to collect information. A questionnaire survey was conducted to investigate the information-seeking behaviour of allied health personnel. The questionnaire survey also inquired into the extent to which these persons participated in continuing education programmes. From this it was hoped to determine how information-seeking behaviour and involvement in continuing education programmes are related to the availability, use, and desirability of library resources and services. The method of on-site inspection was used to evaluate hospital libraries in the Study Region with respect to the resources

---

[15] Proposal for Establishing a Demonstration Model of a Health Services Information Network (London, Ontario: School of Library and Information Science, University of Western Ontario, March, 1971).

and services they were able to provide to satisfy the information needs of the hospitals' personnel. In conjunction with this evaluation, a union list of periodicals held by the various hospital libraries was compiled for the purpose of giving an overview of holdings in the region and for the usefulness of such a list to the hospitals involved in the study. Based on a study of the recent literature on health workers in Ontario, an analysis of the individual health professions in terms of education, training, and responsibilities was made for the purpose of planning research and interpreting its findings, and for a better understanding of the people for whom the proposed network is to be designed. Finally, to achieve better insight into what exactly are the "information needs" of allied health personnel, some preliminary interviews were conducted on the basis of which hypotheses could be developed for further study.

CHAPTER II

METHODOLOGY FOR THE QUESTIONNAIRE SURVEY

Study Region

The population under study was allied health personnel in the three Ontario counties of Middlesex, Elgin and Oxford (see Figure 1). These counties cover an area which could be contained within a rectangle approximately 80 miles from east to west and 60 miles from north to south. The city of London (population 220,000) is in the center of this rectangle.

It was largely convenience to the Project Headquarters that dictated the choice of the Study Region. Strictly speaking, it cannot be presumed with the information we have that what is true of the use of information by health personnel in the Study Region would be true of all allied health persons, nor even of all such persons in the Province of Ontario. The region does not include representation of peculiarities characteristic of some of the more isolated and unsettled areas of the Province. For instance, the information needs and information-seeking behaviour of health personnel in rural towns in Northern Ontario are

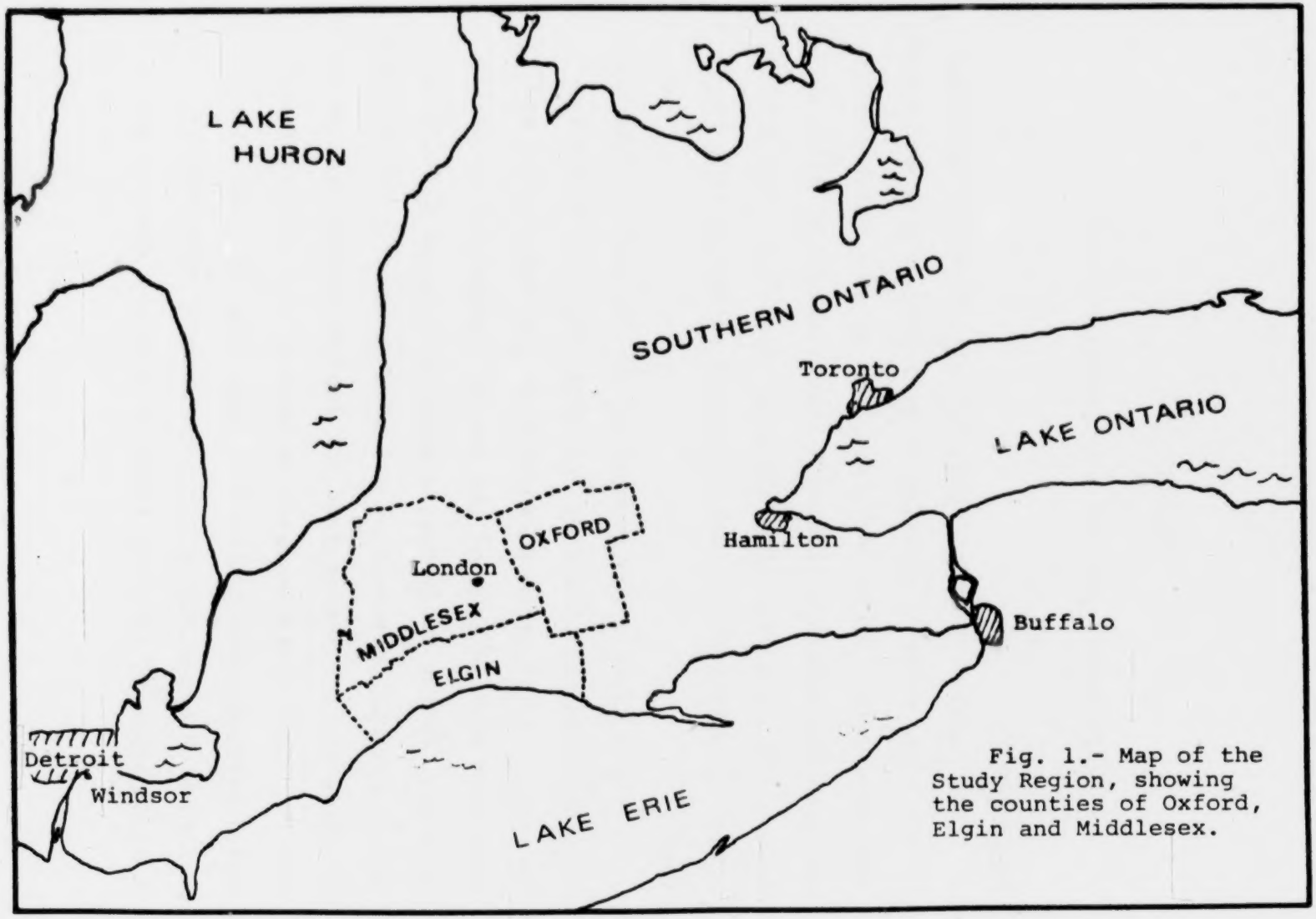


Fig. 1.- Map of the Study Region, showing the counties of Oxford, Elgin and Middlesex.

constrained by a drastic lack of resources not characteristic of the more populated regions in the south.

However, it might be argued that, by virtue of its size and heterogeneity, at least a useful representativeness is achieved in the Study Region: in 1972, the region contained 15 public hospitals,[1] 68 private hospitals and nursing homes and two small organizations which did not fit precisely into either of the former categories.[2] There were also three county health units, four school boards which employed health personnel, a laboratory of the Provincial Health Department and a number of private laboratories. In addition the area contained approximately 847 medical doctors, 30 chiropractors, two osteopaths, 188 dentists, 28 optometrists, 48 V.O.N.'s (Victoria Order of Nurses) and 221 pharmacists.

Certain qualifications of this "representativeness" must be made, however. One has already been mentioned, viz., the region is atypical of rural areas in Northern Ontario, a factor which limits generalization to the Province as a whole. Perhaps a more annoying qualification is the fact that while most allied health professions are represented in the Study Region, some of these are represented by so

---

[1] When the study began there were 15 public hospitals. By the time the study was completed one of these, Beck Sanatorium, no longer existed as a separate institution. The questionnaire survey reports results for 15 hospitals. The survey which examines facilities and resources reports on 14 hospitals.

[2] Madame Vanier Children's Service and Western Ontario Therapeutic Community.

few members (e.g. there are three osteopaths), that generalization with respect to a particular professional category is necessarily limited. It would have been desirable to compare the information-seeking behaviour of chiropractors to osteopaths, but with there being only three osteopaths, such a comparison would not have been valid statistically. Ideally, the Study Region should have been larger so as to include more representatives of the various health professions. Practically, however, given the money, manpower, and time available, the region had to be limited as it was.

Sampling Frame

The determination of sampling units proved difficult. It was not easy to locate and contact accurately all allied health personnel in the Study Region. Resources for doing this were relatively scattered, consisting of lists of personnel employed in institutions, directories and almanacs, association membership lists, "yellow pages", and the information files of libraries and of "Information London". Letters were sent to administrators of institutions in the Study Region, the hospitals, health units, boards of education, etc., requesting information about the numbers of personnel employed in each of certain tentatively designated occupational categories. (They were asked to add any additional categories which might have been overlooked in the preliminary tentative designation.) Similarly, letters were written to the professional associations, such as those for chiropractors, osteopaths,

optometrists and pharmacists, asking their assistance in providing current lists of members in the Study Region. The Membership List[3] of the Royal College of Dental Surgeons supplied a fairly complete list of dentists in the region and the Department of Continuing Medical Education of the University of Western Ontario provided a current list of practicing doctors from which it was possible to select those located within the Study Region.

Certain categories of persons working in health care environments were excluded from enumeration. First were those whose requirements for medical or paramedical information were considered to be marginal. These included housekeepers, food service and general catering staff, secretaries, clerks, data processing operators and hospital engineering staff. No attempt was made to inquire into the information needs of veterinarians. Also excluded were staffs of private hospitals and nursing homes, only a few of which, in response to initial inquiries for lists of personnel, indicated a willingness to participate in the survey. A final exclusion were medical doctors not engaged at least minimally in private practice.

Sampling Design

The problem in sampling is to select a fair sample; that

---

[3] Royal College of Dental Surgeons of Ontario. Membership List. (Toronto: Royal College of Dental Surgeons of Ontario, June, 1972).

is, one which is representative of the population being sampled. Simple random sampling might be one way of drawing such a sample. However, it seems generally believed that simple random sampling can be improved upon by bringing relevant knowledge about "representativeness" to bear on the sample design, such as knowledge of the characteristics of health professions which are related to their use of information. Such characteristics may be used to define different (mutually exclusive) and homogeneous population strata within which to sample. By sampling within strata defined by these relevant characteristics, the likelihood is increased that all meaningful differences in the use of information resources in the population will be adequately represented in the sample.

It was felt that the type of work done by an individual would be the most important single characteristic affecting his information needs and his use of information resources. To take an obvious example, the needs of a doctor and those of a hospital orderly are in general hardly likely to coincide. However, a basic division into "Doctors" and "Others" would have been too simple, inasmuch as "Others" is by no means a homogeneous group. It comprises people working in a number of identifiable subgroups such as nurses, therapists, and technicians. These, in turn, could be analyzed into yet further groups composed of: nurses with a degree, non-

graduate nurses, nursing assistants, etc.; physiotherapists, occupational therapists, etc.; dental technicians, laboratory technicians, radiological technicians, etc. The categorization of groups that was finally decided upon is given below. (Table 2).

Another distinction that was felt to be important as it related to information-seeking behaviour was whether a health worker was affiliated with a hospital, whether he belonged to some other kind of institution, or whether he was engaged in private practice. Hospitals are generally compact, self-contained communities, often largely composed of people who live and work together and have access to some kind of organized information source, however primitive. The private practitioner, on the other hand, will live and work in different places; he may work in complete isolation or, at best, in a building shared with others doing quite similar work.

Intermediate between allied health personnnel working in hospitals and those in private practice are those who are affiliated with institutions of a decentralized character such as health units and school boards. These "semi-institutions" generally lack the compactness and "24-hours-a-day, 7-days-a-week" character of a hospital and usually bring together a much narrower range of professions. Generally, they also seem to lack any kind of organized information source.

A still finer discrimination can be made within the group of health workers affiliated with hospitals. It seems generally accepted that the number of beds in a hospital is indicative of many of a hospital's characteristics; for instance, the information resources in its library and the kinds of expertise in human information sources which are available. Also there is apt to be greater heterogeneity among the health personnel working in large hospitals. Whether a hospital is located in the city or in the country might be considered a factor affecting the use of information by persons working in the hospital. Again, whether the hospital is a general hospital or a special one might be a relevant consideration.

An attempt was made in designing the sampling to take into account as many of the above factors as possible. First, paramedical health personnel allied with hospitals were singled out. Being "allied with a hospital" was operationally defined as being among a hospital's full-time employees.[4] The Hospital sample was then stratified into paramedics associated with small, medium, and large hospitals. The Nonhospital category was stratified into health personnel who were self-employed and those who were allied

---

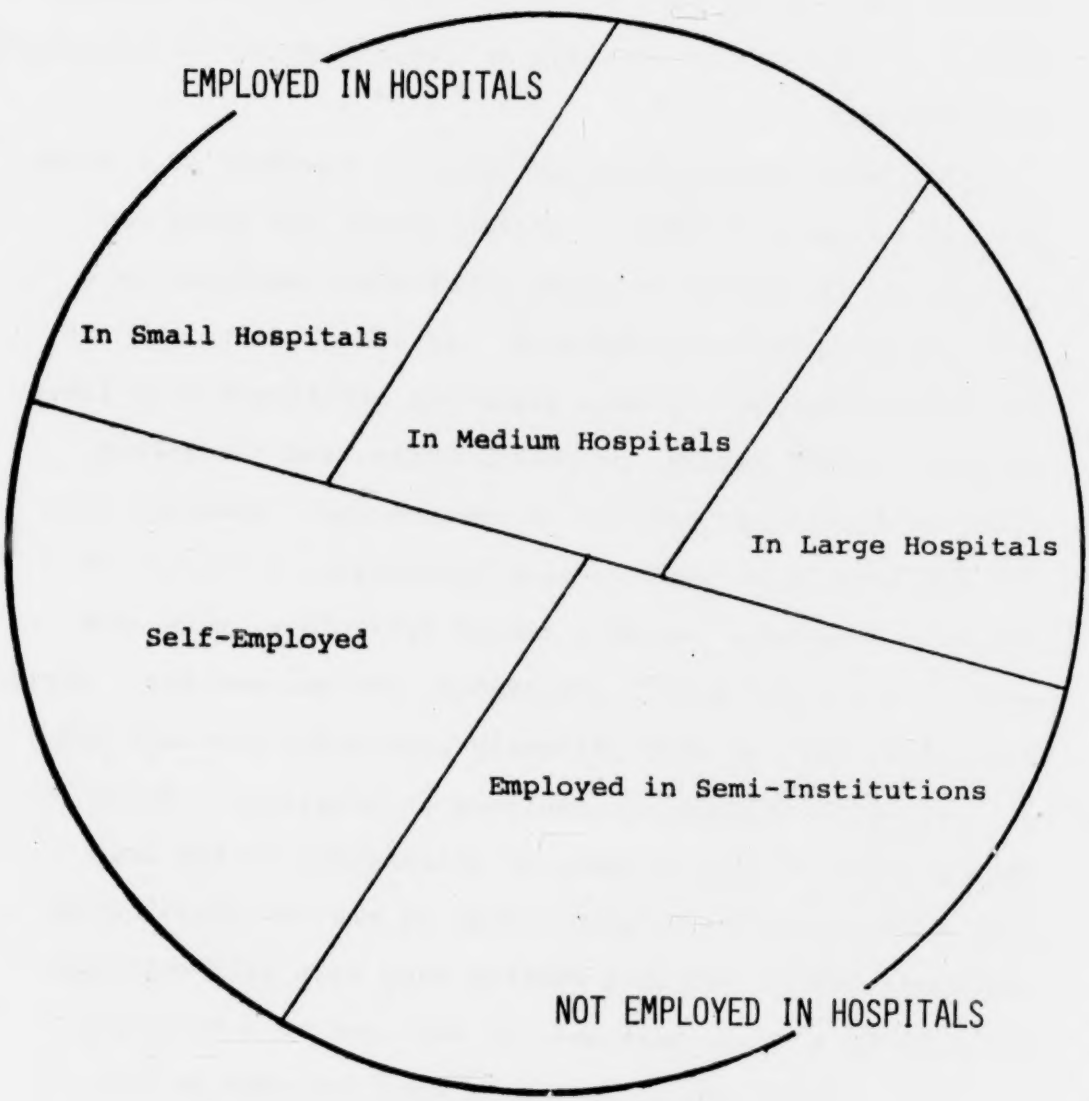
[4] An exception was pharmacists employed by hospitals. See the following paragraph.

with semi-institutions (Figure 2). The self-employed sample includes medical doctors and dentists. Many doctors are not strictly self-employed in that they are not wholly engaged in private practice but have ties with hospitals; they may, for instance, be involved in teaching in hospitals. However, insofar as they are relatively autonomous whether within or without the hospital setting, they may be considered self-employed.

The Semi-institutional category is somewhat of a mixed-bag; it includes all health professionals who could not clearly be classified as being a paramedic employed by a hospital or being self-employed. In actual fact, most of the persons sampled in this group are affiliated with laboratories, school boards, or health units, and the rubric "semi-institutions" may not be unwarranted. However, also classed into this category were professions difficult to classify elsewhere, notably dental hygienists, with whom were also grouped dental assistants, and pharmacists. Dental hygienists working with privately practicing dentists are neither self-employed nor employed in hospitals. While it was possible to obtain names of pharmacists in the area from association membership lists, it was not possible to determine before sampling whether they were self-employed, employed by a small business, or employed in a hospital.

All fifteen public hospitals were included in the sample. Conveniently, these hospitals fell evenly into the

Fig. 2.- First Stratification of the Population



three size-groups, small, medium and large, where size was measured in terms of number of beds. The number of beds ranged in the different hospitals from 55 to 1580. The mean number of beds in the small hospitals was 92, in the medium hospitals 317, and in the large hospitals 804. Table 1 gives the distribution of number of beds among the 15 hospitals in which personnel were surveyed as well as their general location and their type. Also conveniently, eight hospitals were county hospitals and seven were London hospitals, assuring thus a balance with respect to location as well as size. There was as well a fairly even division between special and general hospitals: seven general hospitals and eight special hospitals (Table 1).

The categorization of professions was considerably more problematic. The professions to be sampled within the hospitals were restricted to paramedical professions. These were first divided into nine broad categories: Therapists, Social Workers, Nurses, Registered Nurses Assistants (R.N.A.'s), Technicians, Medical Record Personnel, Dietitians, Hospital Administrators and Miscellaneous. Each of these broad categories was in turn subdivided into smaller, more specific subcategories. For example, within the broad category of Therapists the subcategories Audiologists, Speech Therapists, Physiotherapists, Occupational Therapists, and Prosthetists were recognized. A specification of the subcategories within each of the nine broad categories can be

TABLE 1
Public Hospitals Included in the Sample

Location	Bed Size	Name	Type
London	1167	Victoria	General
London	1135	Westminster	Veterans
London	690	St. Joseph's	General
London	495	London Psychiatric	Mental Illness
London	207	St. Mary's	Chronic
London	110	Children's Psychiatric Research Institute	Mental Illness and Retardation
London	103	Beck Sanatorium	Tuberculosis
Middlesex	129	Strathroy-Middlesex	General
Middlesex	55	Four Counties, Newbury	General
Elgin	1580	St. Thomas Psychiatric	Mental Illness
Elgin	456	St. Thomas-Elgin	General
Oxford	948	Oxford Mental Health Centre	Mental Illness
Oxford	254	Woodstock General	General
Oxford	173	Tillsonburg Memorial	General
Oxford	90	Alexandra, Ingersoll	General

seen in the first column of Table 2.

In the Nonhospital samples, the Self-employed category was subdivided into Dentists, Medical Doctors, and Others, including Osteopaths, Chiropractors, and Optometrists. The category "Employed in Semi-institutions" was subdivided into Dental Hygienists/Assistants; Pharmacists; Public Health Inspectors; and Psycho-social Personnel, including School Social Workers, Psychological Consultants and Guidance Counsellors; Nonhospital Technicians, including Audiological, Medical Laboratory, and Vision Technicians; and Nonhospital Nurses, including Registered Nurses (R.N.'s), R.N.'s with a Degree, R.N.'s with a Diploma, Public Health Nurses, and members of the Victoria Order of Nurses (V.O.N.'s).

The above classification was based on a study of the allied health professions. This study, which aims to characterize the different professions, is given in Appendix A. Roughly, the classification was determined using criteria such as educational level, length of training, amount of direct contact with patients and the degree of personal responsibility. Degree of responsibility was a measure of whether the individual carried out set procedures according to the instructions of a physician or could prescribe directly how to deal with a patient.

As was noted earlier, the population under study, the "allied health professions", is vague in that there are professions which do not easily fall into "natural" groups.

The consequence of this is that at all stratification levels some of the decisions as to whether a profession belonged to one group or another could not help but be somewhat arbitrary. In designing a stratified sample it is required that the strata defined be distinct and nonoverlapping. This condition is violated by the fact that within the Hospital sample the boundary between Therapists and Technicians is fuzzy: inhalation therapists were first classified as Therapists, but then, when they changed their name to "respiratory technologists", they were included with Technicians. The condition is also violated in that the distinction between the Hospital and the Nonhospital samples is not clean-cut. As was indicated, pharmacists may be privately employed or employed by a semi-institution or public hospital. There are, therefore, instances where the design was compromised, though every effort was made to be rigorous.

Determination of Sample Size

For the purposes of the questionnaire survey the total population of health professionals was determined at 6772, of whom 5165 were associated with hospitals, 511 with health units, school boards and laboratories, and 1096 self-employed.

The professions to be sampled within the 15 hospitals were nine in number: Therapists, Social Workers, Nurses, R.N.A.'s, Technicians, Medical Record Personnel, Dietitians, Hospital Administrators, and Miscellaneous. Since the categories of Medical Record Personnel, Dietitians, Hospital

Administrators and Miscellaneous were small, 100 per cent of members in all these categories were surveyed in each of the 15 hospitals.

The numbers in the remaining categories were large: Therapists (115); Social Workers (213); Technicians (417); Nurses (2280); and R.N.A.'s (1982). The sampling of these large categories was based on the following considerations:

1. a 50 per cent response might be expected,
2. for the purpose of statistical analysis, there should be a minimum of 30 respondents in each professional category,
3. each profession should be sampled in each hospital,
4. sampling of a professional category should be proportional to the size of the category, the assumption being that the larger the category the more heterogeneous is is likely to be,
5. sampling of a hospital should be proportional to the number of beds in the hospital, again the assumption being that size is correlated with heterogeneity.

The professions to be sampled were divided into three groups by numbers of members: 1) Therapists and Social Workers (small professions), 2) Technicians (medium-sized profession), and 3) Nurses and R.N.A.'s (large professions). Likewise the hospitals were divided into three groups by numbers of beds; there were five small hospitals, five medium-sized hospitals and five large hospitals.

According to the sampling plan, which was based on the above considerations, two therapists (small profession) were to be surveyed from each of the five small hospitals,

four from each of the medium-sized hospitals and six from each of the large hospitals, giving 60 as the total number of Therapists to be surveyed over all 15 hospitals.[4] Similarly 60 Social Workers were to be surveyed. The Technicians represented a larger professional category (medium-sized profession) and for these the plan prescribed that four be surveyed in each small hospital, eight in each medium-sized hospital and 12 in each large hospital, giving a total for all 15 hospitals of 60. For the largest professional categories, Nurses and R.N.A.'s, the prescription was that six, 12 and 24 respectively be surveyed in each of the small, medium and large hospitals giving a total sample size of 120 Nurses and 120 R.N.A.'s.

Having determined which professions to sample and, within these, how many persons to select, the next step was

---

[4] Sample size for a given profession was determined according to the following formula:

$$\text{Sample Size} = 5(x) + 5(2x) + 5(3x)$$

where the variable x was assigned the value 2 for small professions, 4 for medium-sized professions and 6 for large professions. The values in parentheses (x), (2x) and (3x) denote the numbers of a given profession to be selected repectively from small, medium and large hospitals. Because there were five hospitals in each of these categories, the x factors were each multiplied by 5 and summed to get the total sample size. The reason the value x = 2 was assigned for Therapists was that this was the smallest value x could have to insure a sample size of 60, which is required if a 50 per cent response is expected and a minimum of 30 responses is desired. The value x = 4 was assigned to Technicians, and the value x = 6 to Nurses and R.N.A.'s in rough proportion to the number of members in these professional categories.

to number each person in each professional group within each hospital of a given size and to select the actual sample according to a random number table. Unfortunately, it was not always possible to to this. Six of the 15 hospitals refused to supply names of their employees on grounds of limited time and resources. In these six cases all that could be done was to ask the hospitals to select the persons to be surveyed, giving them specific instructions as to how these persons should be chosen and how many persons should be chosen in each professional category.

Another difficulty in the carrying out of the sampling plan was that some hospitals did not have as many persons in a given professional category as was required by the plan. For instance, in the Oxford Mental Health Centre the total number of therapists was five whereas the plan called for six. In this case all five therapists were sampled.

The result of not having names of personnel in some of the hospitals and of not finding the requisite number of members of given professional group to sample is that the actual sample taken was more like a quota sample than a probability sample, insofar as there were instances when absolute randomness could not be achived. It was felt that this was not particularly serious, in that there were relatively few such instances. In any case, care was taken to achieve as realistic a representation of the pop-

ulation of allied health personnel working in hospitals as was practicably possible. Table 2 shows the population and actual sample sizes for the nine main categories of professionals and the subcategories within these. Table 3 also shows population and sample sizes, this time with respect to the nine broad categories distributed over hospitals of different sizes.

The sampling procedure for the Nonhospital samples followed a somewhat different plan. There were so few members in many of the Self-employed and Semi-institutional professions that there was no choice but to survey all of them.[5] This was not the case, however, for Doctors, Dentists and Pharmacists. Lists of members of these

---

[5] It might be noted that from the point of view of analysis of results many of these small categories would have to be ignored - at least in this study. It would not be statistically meaningful, for instance, to compare the information-seeking behaviour of three audiological technicians with that of three osteopaths. However, as indicated earlier, from the point of view of sampling it is desirable to sample distinct homogeneous categories separately to the purpose that greater representativeness is assured. The categories of Audiological Technicians, Chiropractors, etc., while not analyzable in themselves, by their presence contribute to the representativenesss of the whole sample. Also it might be noted that there is no problem caused by nonproportional sampling; that is, by taking a 100 per cent sample of one profession and only a fractional sample of another. It is required in sampling not that every member of the total population have an equal chance of being selected, but that every member have a known chance. The disproportionality can be rectified by weighting the different samples in proportion to the populations sampled. (see p. 42).

TABLE 2
Population and Sample Sizes by Professional Categories (Hospital Sample)

Professional Categories	Population Size	Sample Size
Therapists	115	54
Audiologists	3	1
Speech Therapists	7	2
Physiotherapists	60	29
Occupational Therapists	40	22
(Prosthetists)	5	0
Social Workers	213	34
Play Therapists	46	10
(Child Care Workers)	10	0
Vocational Rehabilitation Counsellors	102	4
Medical Social Workers	55	20
Nurses	2280	180
Nurses		
R.N.'s		
R.N.'s with Degrees		
R.N.'s with Diplomas		
Public Health Nurses		
R.N.A.'s, Orderlies, Aides	1982	180
R.N.A.'s		
Hospital Orderlies, Aides		
Technicians	417	87
(Audiological Technicians)	1	0
Dental Assistants	10	4
E.C.G. Technicians	21	5
E.E.G. Technicians	12	3
Inhalation Technicians/Therapists	26	4
Medical Electronics Technicians	6	2
Medical Lab. Technologists	217	41
Nuclear Medicine Technologists	11	1
Radiographers	9	1
Radiological Technicians	103	25
Medical Photographers	1	1
Medical Record Personnel	30	30
Medical Records Librarians	22	22
Medical Records Technicians	8	8
Dietitians	36	36
Dietitians		
Hospital Administration	43	43
Hospital Adminstrative Officers		
Miscellaneous	49	49
Clinical Psychologists	16	16
Psychometrists	18	18
Biologists	12	12
Pharmacologists	2	2
Statisticians	1	1
Total	5165	693

TABLE 3

Population and Sample Sizes
by Professional Categories by Hospital Size (Hospital Sample)

Professional Categories By Hospital Size	Population Size	Sample Size
Therapists		
small hospitals	13	9
medium hospitals	20	16
large hospitals	82	29
Social Workers		
small hospitals	111	3
medium hospitals	30	4
large hospitals	72	27
Nurses		
small hospitals	208	30
medium hospitals	659	60
large hospitals	1413	90
R.N.A.'s		
small hospitals	173	30
medium hospitals	384	60
large hospitals	1425	90
Technicians		
small hospitals	40	15
medium hospitals	49	29
large hospitals	328	43
Medical Record Personnel		
small hospitals	9	9
medium hospitals	7	7
large hospitals	14	14
Dietitians		
small hospitals	5	5
medium hospitals	8	8
large hospitals	23	23
Hospital Administrators		
small hospitals	15	15
medium hospitals	9	9
large hospitals	19	19
Miscellaneous		
small hospitals	13	13
medium hospitals	7	7
large hospitals	29	29
Totals	5165	693

professions practicing in the area were compiled in the manner described on p. 12, and a selection from these lists was made according to a random number table. The number of persons to be selected from these lists was calculated using a standard formula[6] and assuming:

1. a standard error of .05 (s.e. = .05)
2. a 95 per cent confidence (z = 2)
3. a 50 per cent chance that a yes/no type question would be answered in the affirmative (p = .5, q = .5).

The calculations gave the following sample sizes: for Pharmacists and Dentists, n* = 133, and for Medical Doctors, n* = 264. Again, actual sample sizes fell somewhat short of those theoretically determined (Table 4).

A total of 1505 questionnaires were distributed to health professionals in the Study Region: 693 to the Hos-

---

[6] A sample size n was estimated for each of the categories, Doctors, Dentists, and Pharmacists according to the formula:

$$n = \frac{z^2 pq}{(s.e.)^2} = \frac{4 \times .5 \times .5}{.5 \times .5} = 400$$

Since n = 400 is more than 10 per cent of the populations (N's) of Doctors or Dentists or Pharmacists, a correction for finite population was used:

$$n^* = \frac{n}{1 + \frac{n}{N}}$$

where roughly for Pharmacists, N = 200, for Dentists, N = 200, and for Medical Doctors, N = 850.

TABLE 4

Population and Sample Sizes (Nonhospital Samples)

Professional Categories	Population Size	Sample Size
A. Self-Employed Sample		
Doctors	847	224
Dentists	188	117
Other	61	61
Osteopaths	3	3
Chiropractors	30	30
Optometrists	28	28
Total Self-Employed	1096	402
B. Semi-Institution Sample		
Nonhospital Nurses	177	177
Public Health	129	129
R.N.'s		
R.N.'s with Degree		
R.N.'s with Diploma		
V.O.N.'s	48	48
Pharmacists	221	120
Dental Personnel	40	40
Hygienists	26	26
Assistants	14	14
Public Health Inspectors	26	26
Nonhospital Technicians	40	40
Audiological	3	3
Medical Laboratory	35	35
Vision	2	2
Psycho-Social Personnel	7	7
School Social Workers	2	2
Psychoeducational Consultants	3	3
Guidance Counsellors	2	2

pital group, 410 to the Semi-institutional group, and 405 to the Self-employed group.

The Questionnaire

The questionnaire[7] (see pp. 34-38) had basically three objectives: 1) to determine how allied health persons seek and use information; 2) to determine the extent to which these persons are involved in programmes of continuing education; 3) to determine how information-seeking behaviour and involvement in continuing education programmes are related to the availability, use, and desirability of library resources and services.

The questionnaire was divided into four sections. The first section asked for descriptive information such as the respondents' age, sex, educational background, employing institution, and professional qualifications (Questions 1-14).

The second section inquired into aspects of continuing education: whether the respondent knew of current programmes in his own field; whether he was engaged in or teaching in such a programme; the nature of the programme, short refresher

---

[7] Actually, two different questionnaires were used in the survey. A modified version of the original questionnaire was distributed to the Self-employed groups, to Doctors, Dentists, Chiropractors, Osteopaths and Optometrists. The modified questionnaire asked fewer questions about continuing education programmes and laid greater emphasis on eliciting data about specific requests for information.

course, correspondence course, etc.; and where it was held. Questions were also asked about the bibliographic resources required for continuing education courses and how they were obtained (Questions 15-22).

The third section of the questionnaire was designed to investigate the information-seeking behaviour of health professionals, the main objective being to discover their information needs. However, it was felt that asking persons directly what their needs are can result in answers misleading or obfuscating. It was therefore decided that a better approach would be to determine how, in fact, these persons seek and use information and, from this, to infer something about their needs. Distinguishing current awareness information from information specific to a particular need, two central questions were asked: "How do you usually become aware of new developments in your field?" and "On the last occasion you had a specific need for information what action did you take?" Several other questions were asked to elicit preferred ways of obtaining information and to assess the importance of current awareness information to the respondent and the frequency with which specific information needs arose (Questions 23-25, 33-35).

The final section of the questionnaire was concerned with the availability, use, and desirability of library services and resources. Respondents were asked whether there was a library at their place of work and, if so, when

they had last visited it. They were asked what library services they would be likely to use for information related to their work, and at what times and places they would like to have these services available. Finally they were asked whether they felt libraries were useful in providing information or books connected with their work. It was felt that answers to these questions would be especially relevant in indicating potential readiness to use a medical information network.

At the end of the questionnaire some miscellaneous questions were asked about willingness to participate in further studies, and comments on the survey in general were requested. The questionnaire in near-final form was pretested in three hospitals in London where the staff was sufficiently large to provide a broad range of health professions. Thirty-five questionnaires were distributed, all of which were returned. The answers to the questions and the comments made on the questionnaires led to the making of minor revisions.

Medical Information Survey

THE UNIVERSITY OF WESTERN ONTARIO, CANADA

School of Library and Information Science
The University of Western Ontario
London 72, Ontario

ALL REPLIES WILL BE TREATED AS STRICTLY CONFIDENTIAL. NO-ONE WILL BE IDENTIFIED.

---

1. Employing Institution or Organization _____

2. Name (Please Print) _____ 3. Sex 1. M ☐ 2. F ☐

4. Year of Birth: 1. before 1915 ☐ 2. 1916-1925 ☐ 3. 1926-35 ☐
   4. 1936-45 ☐ 5. after 1945 ☐

---

5. What is the official title of your position? _____

6. Please give some typical examples of the sort of things you do (preferably based on what you did today and yesterday).

_____

_____

_____

_____

How long have you been employed in this kind of work?

7. A. here since 19____ 7.B. elsewhere from 19____ to 19____

8. Would you say that the work of your profession

1. is fairly static	1. ☐
2 changes very slowly	2. ☐
3. changes, but not too fast	3. ☐
4. changes fairly rapidly	4. ☐
5. is constantly changing	5. ☐

---

9. What was your highest grade completed at high school?

9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐

Medical Information Survey

10. How did you train for your work? (More than one alternative may be marked)
    1. in-service training ☐ 2. full-time course ☐
    3. part-time course ☐ 4. correspondence course ☐

11. If still in training, mark here ☐

12. Do you have any professional qualifications (certificate, diploma, degree)?
    1. YES ☐ 2. NO ☐
    If YES, please give details _____

13. In what year did you qualify? 19___
    (If you qualified outside of Canada, please mark here * ☐)

14. Are you a member of any professional organisation(s)? 1. YES ☐ 2. NO ☐
    If YES, please give name(s) here _____

15. Do you know of any current programme of further professional education and training in your own field (eg. learning about new apparatus or procedures, preparation for an advanced-level qualification, and so on)? 1. YES ☐ 2. NO ☐

16. Are you engaged in any such programme? 1. YES ☐ 2. NO ☐
    If you are teaching the course, please mark here * ☐

17. If you answered "YES" to Question 16, how is it presented?
    1. day classes 1. ☐
    2. evening classes 2. ☐
    3. short refresher courses 3. ☐
    4. periodic conferences, "workshops", etc. 4. ☐
    5 correspondence courses 5. ☐

18. If you marked 1, 2, 3, or 4 in Question 17, where are these held?

Item (from Q 17) → 1	2	3	4
Location ↓			
1. at your place of work 1.			
2 in the same town 2.			
3. at another town 3.			

19. Are books required for study in connection with this programme?
    1. YES ☐ 2 NO ☐

20. If YES, do you have to buy them, or can you obtain them otherwise?
    1. buy ☐ 2. provided by teaching institution ☐ 3. borrow ☐

21. If borrowed, where do you normally get them from?
    1. teaching institution ☐ 2. hospital library ☐
    3. professional society, etc. ☐ 4. public library ☐
    5. other source (please specify)_____

22. How easy is it to borrow the books you need?
    1. very easy ☐ 2. satisfactory ☐ 3. very difficult ☐

---

23. How do you usually become aware of any new developments in your field of work? (more than one may be marked)

1	through instructions given by your superiors	1. ☐
2.	by notification from your professional organisation	2. ☐
3.	by reading articles in periodicals connected with your work	3 ☐
4	by attending courses or classes	4. ☐
5	by attending meetings of your professional organisation	5. ☐
6.	by reading articles in newspapers or magazines	6. ☐
7	from radio or television programmes	7. ☐
8	by talking to your colleagues	8. ☐

24 Which of the foregoing methods are most effective in your becoming aware of new developments? (In appropriate boxes, place the numbers representing up to three of the items chosen in Question 23.

1 Most effective ☐ 2. 2nd most effective ☐ 3. 3rd most effective ☐

25. So far as your everyday work is concerned, how important is it for you to have knowledge of new developments in your field?
    1 not really necessary ☐ 2. useful ☐ 3. very important ☐

---

26 Is there a library in the place where you work?
    1 YES ☐ 2. NO ☐ 3. DON'T KNOW ☐

27. If you answered "YES" to Question 26, have you ever used it?
    1. YES ☐ 2. NO ☐

28. If you answered "YES" to Question 27, when did you last go there to look something up or to borrow books?
    1. within 24 hours ☐ 2. within 7 days ☐
    3 within 4 weeks ☐ 4. over 4 weeks ago ☐

29. How valuable do you think a library might be in providing information or books connected with your work? (Please select one value on the following 5-point scale).

1: not useful at all ☐ 2. ☐ 3. ☐ 4. ☐ 5. extremely useful ☐

30. If the following library services were available to you, which of them would you be most likely to use for information related to your work? (More than one may be marked).

1. books for reference only 1. ☐
2. periodicals for reference only 2. ☐
3. books and periodicals for borrowing 3. ☐
4. tape-recordings of talks, lectures, etc. 4. ☐
5. slides 5. ☐
6. films 6. ☐
7. photocopies 7. ☐
8. telephone enquiry service 8. ☐
9. personal notification of current publications (eg. books or articles in periodicals) of interest to you 9. ☐

31. If a library service were available to you for information connected with your work, which location would you find most convenient to visit (assuming it was not at your place of work)?

1. in a local hospital 1. ☐
2. in the public library premises 2. ☐
3. at some other place (eg. health unit, community college, etc.) Please specify_____ 3. ☐

_____

32. At what times would you find it easiest to visit a library? (More than one may be marked.)

1. during the morning 1. ☐
2. during the lunch hour 2. ☐
3. during the afternoon 3. ☐
4. at the end of the afternoon 4. ☐
5. during the evening 5. ☐

---

33. In the course of your daily work, how often do situations arise, (other than medical emergencies) for which you need information beyond what you already possess because of your previous training and experience? (Examples, a patient with an unusual disease; a procedure or equipment you are not already familiar with; a pollution crisis caused by some previously unsuspected agent).

1. frequently ☐ 2. occasionally ☐ 3. rarely ☐

34. On the last such occasion that you can recall, what action did you take to get the necessary information?

1.	ask one of your colleagues on the spot	1. ☐
2.	ask a colleague nearby (but not in the same room)	2. ☐
3.	phone someone about it	3. ☐
4.	write to someone about it	4. ☐
5.	look up the information in a book	5. ☐
6.	go to a library to find out	6. ☐

35. Do you remember which of the above was the first thing you did?

(Give number here) _____

---

36. Do you subscribe to any periodicals dealing with your field of work (or do you receive any from professional organisations)? 1. YES ☐ 2. NO ☐

37. What was the subject of a recent article related to your work that you have read?

_____

_____

38. Please mark here if you would be willing to take part in further studies of information use, either by questionnaire or interview.

1. QUESTIONNAIRE ☐ 2. INTERVIEW ☐

---

39. If you would like to make any comments, either about the questions we have asked, or about the general subject of this study, we would be interested to hear your views.

Please mark here ☐ and write them on the back of this page.

Thank you for your help, which is much appreciated.

Geoffrey R. Pendrill

Geoffrey R. Pendrill
Associate Professor
and Project Leader

CHAPTER III

RESPONSE RATES AND INFORMATION ABOUT THE RESPONDENTS

Response Rates

The distribution of responses according to professional categories sampled is shown in Table 1. Table 1 also shows response samples as a percentage of the populations sampled and the standard errors[1] associated with each of the response samples. Altogether, 1505 questionnaires were distributed to health personnel in hospitals and semi-institutions and to those who were self-employed. Of these 1505, there were 1071 useable returns, giving a response rate of 71.2%. For the

---

[1] When a result is expressed as a percentage (e.g. 53% of health professionals working in hospitals are under 26 years of age), the standard error of the percentage (e.g. 1%) gives an indication of the reliability of the sample in terms of adequacy of size. Rather than report standard errors for each percentage separately (e.g. 53 ± 1%), maximum standard errors were computed corresponding to percentages of 50 per cent. Standard errors were calculated assuming a confidence of 95.44%, and computing for p = 0.05 according to the formula:

$$\text{s.e.} = 2\sqrt{\frac{pq}{N_x}} \quad X \quad \left(1 - \frac{n_x}{N_x}\right)$$

where p is the percentage of one type of responses, say a "yes" response, q is the percentage of the opposite response, N_x the total population represented by the sample, and n_x the number of sample responses. In reading the analyses of results in this report, answers to the questions of the yes/no type given in terms of percentages are to be interpreted with respect to the standard error appropriate to the sample being discussed. In most cases the actual standard error is less than the approximation given by the maximum standard error.

TABLE 1

Response Rates

Aggregate x	Population N_x	Response Sample n_x	Response as Percentage of Population	Associated Standard Error*
Total	6772	1071	18%	0.01
Hospital	5165	622	12%	0.01
Semi-institutional	511	268	52%	0.02
Self-employed	1096	181	17%	0.02
Nonhospital	1607	449	39%	0.02
Hospital Sample				
Therapists	115	47	41%	0.06
Social Workers	213	28	13%	0.06
Hospital Nurses	2280	166	7%	0.02
R.N.A.'s	1982	166	8%	0.02
Hospital Technicians	417	85	20%	0.04
Medical Record Personnel	30	27	90%	0.02
Dietitians	36	31	86%	0.02
Hospital Administrators	43	35	81%	0.03
Miscellaneous	49	37	74%	0.04
Semi-institutional Sample				
Nonhospital Nurses	177	124	70%	0.02
Pharmacists	221	63	28%	0.05
Dental Personnel	40	25	63%	0.06
Public Health Inspectors	26	24	92%	0.02
Nonhospital Technicians	40	25	63%	0.06
Psycho-social Personnel	7	7	100%	0.00
Self-employed Sample				
Medical Doctors	847	115	14%	0.03
Dentists	188	49	26%	0.05
Others	61	17	27%	0.09
Hospital Sample by Size				
Small	587	112	19%	0.03
Medium	1173	189	16%	0.03
Large	3405	321	9%	0.02

Hospital category, 693 questionnaires were distributed and 655 returned. Of those returned, 20 were withdrawn because of faulty identification of the occupational category (for example, a Doctor filling in a questionnaire intended for a Hospital Administrator, or a Food Service Supervisor a questionnaire for a Dietitian). Another 13 were returned without having been filled in. In some cases it was stated that the designated individual was sick or on holidays. Although it was not stated whether any of the recipients had declined to fill out a questionnaire, this is a possibility. Nevertheless, the 622 "useable" questionnaires represent the high response rate of 89.8%. And the standard error associated with the Hospital sample is acceptably small, 0.01.

The response rate for the Self-employed category was not so gratifying. There were 402 questionnaires distributed to Doctors, Dentists, and Others (Osteopaths, Chiropractors and Optometrists), but only 181 were returned, giving a low response rate of 45.0% and a standard error of 0.02. There were particularly few returns from Osteopaths, Chiropractors and Optometrists, professions sparsely represented in the Study Region in any case. Consequently, the reliability of results reported for these three professions individually considered is questionable.[2]

---

[2] As can be seen from Table 1, the standard error for the "Others" category (Chiropractors, Optometrists and Osteopaths) is rather large (s.e. = 0.09).

The response rate for the Semi-institutional category was somewhat better, 65.3%. Of the 410 questionnaires distributed, 268 were returned. Since 100% samples were taken of all professions in this category except Pharmacists, the number of responses viewed as a percentage of the population samples was quite high (52.0%).

Looking at responses of the individual professions, it can be seen from Table 1 that they represent differing proportions of the population samples. For reporting results for a broad category, which is an aggregate of individual professions, this disproportionate representation can be evened out by weighting the aggregating subsamples.[3] Weighting was done for the Hospital sample and the Self-employed sample; it was felt that weighting would be unnecessary for the Semi-institutional sample since it represented over half of the population sampled.

---

[3] The weighting formula used was

$$\frac{n_T}{N_T} \times \frac{N_X}{n_X}$$

where N_X is the population from which the subsample is taken,
N_T is $\sum_X N_X$,
n_X is the number of responses in subsample x, and
$n_T = \sum_X n_X$.
Given unweighted "yes" responses, the formula to obtain the average percentage of weighted "yes" responses is

$$100 \sum_X \left(\frac{f_{XY}}{n_X} N_X \right) / N_T$$

where f_{XY} is the number of "yes's" in subsample x.

Information about the Respondents

The complete background information about the respondents which was obtained in questions 1-14 of the questionnaire can be found in Tables 2, 3, and 4. It will be summarized only briefly below.

Hospital Sample (Paramedical Personnel)

Although four-fifths of the respondents in the Hospital sample are female, the male-female ratio varies widely according to the individual professions.[4] For instance, most of the Hospital Administrators are male, while all of the Dietitians are female.

Thirty per cent of all the respondents say they were born since 1945. The profession with fewest young people is the Hospital Administrators, with only 2.9% of the respondents born after 1945. The Therapists include the highest percentage of young people, with over 40% under 26 years of age.

It is interesting that in the overall sample, slightly over one-quarter of the respondents did not complete Grade 12. Only 30% finished Grade 13.[5] The group with the highest percentage of graduates from Grade 13 is the Therapists (77.3%).[6] The R.N.A.'s are the least well educated; only

---

[4] Throughout, percentages are calculated excluding the respondents who did not answer each question.

[5] This questionnaire did not ask about education beyond the Grade 13 level.

[6] Throughout, significance is determined using the Chi Square Test. The difference between the number of Therapists who finished Grade 13 and the next highest group (Miscellaneous) is significant at 0.010 (6.9, 1 df).

TABLE 2

Background Information about Respondents (Hospital Sample)

	Sex	Age	High School Education Completed*		Type of Training							
	Percent female	Percent born since 1945	Grade 12	Grade 13	In-service	Full-time course	Part-time course	Correspondence course	Still in training	Professional Qualifications	Qualified since 1960	Membership in professional organizations
Therapists	91.3	40.4	18.2	77.3	21.3	93.6				100.0	63.8	97.8
Social Workers	70.4	29.6	25.9	70.4	39.3	75.0	3.6		3.6	96.3	66.6	48.1
Hospital Nurses	94.5	24.4	55.7	35.4	39.2	8011	6.6	12.0	4.8	97.5	49.4	70.9
R.N.A.'s/Orderlies	77.4	37.2	38.2	4.5	48.8	65.1	3.6	1.2	4.2	87.7	80.2	40.5
Hospital Technicians	63.5	27.4	28.8	57.5	69 4	52.9	18.8	2.4	3.5	87.3	66.3	94.9
Medical Record Personnel	96.3	25.9	26.9	61.5	59.1	48.1	7.4	48.1	3.7	85.2	73.1	77.8
Dietitians	100.0	25.8	33.3	43.3	51.6	90.3		3.2	3.2	100.0	35.5	96.7
Hospital Administrators	28.6	2.9	37.1	54.3	42.9	51.4	14.3	22.9	20.0	85.7	40.0	75.0
Miscellaneous	45.9	29.7	14.7	70.5	56.8	83.8	2.7		29.7	100.0	86.5	51.4
Total Hospital Sample	81.5	30.7	43.2	30.3	46.8	71.0	6.6	5.8	4.2	93.2	64.4	61.1

* The percentages quoted exclude respondents who did not attend high school in Canada.

4.5% of the respondents in this group report having completed Grade 13.

The question which asked how the respondents trained for their work allowed multiple answers to be given: in-service training, full-time courses, part-time courses and correspondence courses. Less than three-quarters of the overall sample (71%) report having trained for their work by taking a full-time course. The Therapists, as well as having the highest proportion of Grade 13 graduates, include the highest percentage of respondents who took full-time courses (93.6%). As well, more than three-quarters of the Dietitians, Miscellaneous, Nurses and Social Workers prepared for their work with full-time courses. At the same time, every professional group includes fairly large numbers of respondents who had in-service training; this varies from the Therapists at 21% to the Technicians at 69%. Part-time and correspondence courses, however, proved not to be very common types of training. Part-time courses were most often attended by Technicians and Hospital Administrators, while significantly more Medical Record Personnel report having taken correspondence courses (50%) than any other group.[7]

Although only 71% of the respondents prepared for their work by taking a full-time course, 93% say that they have professional qualifications: certificate, diploma, or degree. Even the groups having the smallest number of members with

---

[7] The difference between the number of Medical Record Personnel who took correspondence courses and the next two highest groups (Hospital Administrators and Nurses) is significant at 0.001 (21.1, 2 df).

professional qualifications are well over 80% qualified, and none of the Therapists, Dietitians or Miscellaneous group includes any respondent who is not qualified. This is not surprising, perhaps, in that there are legal requirements which health workers must meet in order to be able to practice (see Appendix A).

The question asking in what year the health workers qualified is perhaps the most important of the background questions since it indicates the percentages of people surveyed who are most likely to need up-dating information, courses of continuing education, and so on. In the overall Hospital sample, over 60% of the paramedics qualified since 1960. The percentages of recently trained respondents vary greatly from one group to another. The groups with the highest proportion of members who qualified since 1960 are the Miscellaneous, the R.N.A.'s and the Medical Record Personnel. Fewer Dietitians than any other group qualified in the last 13 years.

Slightly less than two-thirds of those surveyed in the hospitals belong to one or more professional organizations. But again, the individual groups vary greatly, with the Therapists having the greatest tendency to join their associations (97.8%) and the R.N.A.'s the lowest (40.5%).

Analyzing background information from the point of view of hospital size, it is found that the differences between the results for small, medium and large hospitals are generally insignificant, and no obvious pattern emerges.

The only significant difference is in the male-female ratio; medium hospitals having the highest percentage of females (85.6%), followed by the small hospitals (79.5%), and finally the large hospitals (73.3%).[8]

Semi-institutional Sample

Slightly over two-thirds of the respondents in the Semi-institutional sample are female. The Hospital sample has 12% more females. This result, which is significant at 0.005,[9] can at least partly be explained by the presence of the Pharmacists (86.4% male) in the one sample and not in the other. It is interesting, nevertheless, that none of the Nonhospital nurses are male, while there are a few males among the Hospital nurses (5.5%). In addition, a smaller percentage of Hospital technicians is female than of the Nonhospital technicians. In the Semi-institutional sample, all of the Health Inspectors are male, while all of the Dental Personnel (hygienists and assistants) are female.

The respondents of the Semi-institutional sample are significantly older than those of the Hospital sample,[10] (13.7% fewer born since 1945). Pharmacists are the oldest professional group; only 3.2% of them were born since 1945. At the other extreme, over half of the Dental Personnel and over one-third of the Technicians are under 26 years of age.

---

[8] Significant at 0.010 (10.5, 2 df).
[9] (7.9, 1 df).
[10] Significant at 0.001 (13.9, 1 df).

TABLE 3

Background Information about Respondents (Semi-institutional Sample)

	Sex	Age	High School Education Completed*		Type of Training				Still in training	Professional Qualifications	Qualified since 1960	Membership in professional organizations
	Percentage female	Percent born since 1945	Grade 12	Grade 13	In-service	Full-time course	Part-time course	Correspondence course				
Nonhospital Nurses	100.0	13.9	22.8	76.4	44.4	88.7	6.5	0.8	2.4	98.4	43.4	77.9
Pharmacists	13.6	3.2	6.8	93.2	66.7	88.9	1.6	4.8	6.3	100.0	26.9	96.8
Dental Personnel	100.0	52.0	20.0	72.0	28.0	72.0	20.0			88.0	86.4	100.0
Public Health Inspectors		12.5	52.2	26.1	45.8	75.0	16.7	33.3	25.0	100.0	56.0	90.0
Nonhospital Technicians	80.0	36.0	33.3	52.4	60.0	72.0	24.0			88.0	77.3	100.0
Psycho-social Personnel	85.7	14.3	28.5	71.4	28.6	71.4	28.6		14.3	100.0	85.7	100.0
Total Semi-institutional Sample	69.2	17.0	22.5	73.3	49.3	84.0	9.7	4.5	5.2	97.0	48.5	88.1

* The percentages quoted exclude respondents who did not attend high school in Canada.

The Nonhospital nurses are older than the Hospital nurses (13.9% and 24.4% respectively born since 1945), but the reverse is true of the two groups of technicians.

This sample has a much higher proportion of respondents who completed Grade 13[11] than the Hospital sample. One factor influencing these results might be that the Semi-institutional sample does not include any R.N.A.'s or orderlies and does, on the other hand, include Pharmacists. It is not surprising that in this sample the Pharmacists are the best educated group (93.0% finished Grade 13). Technicians and Health Inspectors have the fewest Grade 13 graduates (52% and 26% respectively). A very much larger percentage of the Nonhospital nurses finished Grade 13 than of the Hospital nurses, but slightly more Hospital technicians finished Grade 13 than Nonhospital technicians.

The results for this sample of the question asking about type of training undergone show a pattern quite similar to the Hospital sample, except that significantly more Semi-institutional respondents took full-time courses than did those from hospitals.[12] This is true both of the Nonhospital nurses and technicians as compared to the Hospital nurses and technicians. These results, along with the results about high school grade completed, indicate that the Semi-institutional sample is, on the whole, better educated and better trained than the Hospital sample.

---

[11] Significant at 0.001 (81.4, 1 df).
[12] Significant at 0.001 (16.9, 1 df).

Looking at the individual professions of the Semi-institutional sample, it is found that at least 70% of the respondents from every group say they trained by taking full-time courses. Part-time courses were taken least often by Pharmacists and Nurses, and most often by the Psycho-social Personnel. Correspondence courses were taken by very few respondents in any group except the Health Inspectors, one-third of whom report having had this type of training. In-service training seems to be common to all groups, ranging from the Dental Personnel (28%) to the Pharmacists (66.7%).

Likewise, significantly more respondents of the Semi-institutional sample report having professional qualifications (certificate, diploma, degree) than of the Hospital sample;[13] however, their respondents qualified, on the average, significantly longer ago than the Hospital paramedics.[14] All of the Pharmacists, Health Inspectors and Psycho-social Personnel, as well as over 98% of the Nurses, say they are qualified in the Semi-institutional sample. Even the other two groups, Dental Personnel and Technicians, report being 88% qualified. About 85% of the Dental and Psycho-social Personnel qualified since 1960; Pharmacists have the fewest recently-trained respondents in this sample (26% qualified since 1960).

Finally, significantly more Semi-institutional respondents belong to professional organizations than Hospital

---

[13] Significant at 0.025 (5.8, 1 df).
[14] Significant at 0.001 (17.6, 1 df).

respondents.[15] This is true both of the groups of nurses and technicians. Perhaps this reflects a need on the part of health care workers in health units and school boards to overcome a feeling of professional isolation which is not experienced by the hospital paramedics. Over 90% of the respondents in every group say they belong to their associations except the Nurses, 77.9% of whom are members.

The picture which emerges of the "average" Semi-institutional health care worker is a person who is older, better educated and more apt to have professional qualifications and to belong to professional organizations than her (his) counterpart working in the hospital.

Self-employed Sample

Roughly half of the respondents in the Self-employed sample have qualifications other than the M.D. or the D.D.S. These qualifications are shown in Table 5. Only 29% of the respondents report having qualified since 1960. The Dentists and the Others have more recent qualifications than the Doctors (see Table 4 for the actual percentages).

To one question which asked if respondents have any special professional interests, nine-tenths answer affirmatively. However, only a little over one-third actually report the name of the specialty certificate or fellowship which they possess. Almost half of the Doctors give the name of their area of specialization - most common are

---

[15] Significant at 0.001 (26.3, 1 df).

TABLE 4

Background Information about Respondents
(Self-Employed Sample)

	Qualified since 1960	Special professional interests	Certificate of Specialization or Fellowship	Solo practice	Hours per week of office hours		
					Less than 10 hours	10 to 40 hours	Over 40 hours
Doctors	22.5%	90.9%	46.1%	50.6%	6.1%	59.2%	34.7%
Dentists	50.0%	88.6%	8.2%	88.1%	2.1%	60.4%	37.5%
Others	42.9%	84.6%		64.7%		58.8%	41.2%
Sample Total	29.3%	90.3%	37.3%	58.5%	5.0%	59.4%	35.6%

	Time devoted to other activities				Hours per week devoted to study		
	Teaching	Committee work and Administration	Research	Other	Less than 5 hours	5 to 10 hours	More than 10 hours
Doctors	29.6%	44.3%	49.4%	26.9%	37.8%	44.1%	18.0%
Dentists	26.5%	10.2%	24.0%	26.5%	68.7%	25.0%	6.3%
Others	5.9%	23.5%	62.5%	17.6%	47.1%	52.9%	
Sample Total	27.8%	37.5%	46.7%	26.3%	43.5%	41.4%	15.0%

TABLE 5

Qualifications Other than the M.D. or D.D.S.
(Self-employed Sample)

Qualification	Doctors	Dentists	Others
Certificate	20.0%	2.0%	
Diploma	13.0%	6.1%	5.9%
Fellowship	31.3%		11.8%
Membership	6.1%		
Other Qualifications	3.5%		
B.Sc.	7.8%	10.2%	
M.Sc.	2.6%	4.1%	
Ph.D. (Sciences)	3.5%		
B.A.	8.7%	4.1%	
M.A.	2.6%		
Ph.D. (Arts)	1.7%		

n_T (total respondents) = 181

psychiatrists, radiologists, anaesthesiologists and specialists in internal medicine, pathology, and preventive medicine - while only 8.2% of the Dentists and none of the Others do so.

Over half of the respondents have practices by themselves, without partners. Eightly-eight per cent of the Dentists are in private practice alone, while significantly less of the Others and the Doctors (65% and 50% respectively) practice without colleagues.[16] This means that the Dentists have clearly the greatest tendency to be professionally isolated.

One group of questions asked how much time the respondents spend on various activities. Only 5% of them have less than ten office hours a week, while over one-third have more than 40 office hours. Over one-quarter of the respondents are engaged in teaching, over one-third devote time to committee work and administration, and 46% are involved in, or contemplating, research. One-quarter are also involved in other activities such as lab work, representation on Boards of Governors, coroner's duty, consulting work, and visits to nursing homes. Doctors tend to have fewer office hours a week than Dentists who, in turn, have fewer office hours than Others. This difference (not significant anyway) can probably be explained by the fact that the Doctors are more heavily involved in the various other activities mentioned above.

---

[16] The difference between the number of Dentists in solo practice and the next closest group (Others) is significant at 0.050 (4.36, 1 df).

When asked how many hours a week they are able to devote to private study, including attending meetings, lectures, and taking courses, two-fifths of the respondents say they spend less than five hours, about an equal number say five to ten hours per week, and 15% say they are able to devote more than ten hours a week to current awareness and continuing education activities. The breakdown by profession shows that two-thirds of the Dentists devote less than five hours a week to private study, while just under half of the Others and slightly more than one-third of the Doctors do not spend over five hours a week on study. Eighteen per cent of the Doctors, 6.3% of the Dentists, and none of the Others are able to spend over ten hours a week on private study.[17]

The Self-employed groups have a higher tendency to belong to professional organizations than the Hospital and Semi-institutional groups.[18] In fact, only two out of 181 respondents report that they do not belong to any of these. The Dentists and Doctors belong, on the average, to three or four professional organizations, with some belonging to as many as eight or nine. The Osteopaths, Chiropractors and Optometrists have a slightly lower average (two to three organizations per respondent).

---

[17] Differences are significant at 0.050 (61.9, 2 df).

[18] Significance comparisons were not made between the Self-employed sample and the other samples in that the questionnaire sent to the Self-employed sample differed somewhat from the questionnaires sent to the Hospital and Semi-institutional samples.

Comparing the percentage of respondents of the Self-employed sample who qualified since 1960 with the percentages in the other two samples, it is seen that the former is much smaller than either of the latter. Similarly, a much smaller percentage of the Self-employed respondents is involved with courses of continuing education. The Self-employed group would seem to need continuing education more than the other two groups, both because they have a greater professional responsibility and because they qualified, on the whole, longer ago. However, their lower participation in courses may be offset by continuing education obtained through a greater participation in professional organizations and through the reading of more professional journals.

CHAPTER IV

INFORMATION-SEEKING BEHAVIOUR

In designing any information system, it is important to discover the information needs of its potential users. As was mentioned in Chapter II, needs are difficult to determine in that they are often unperceived. It was decided, therefore, to try an indirect approach and ask not about needs per se but about information-seeking behaviour and, from this, to infer something about needs. This chapter then deals with the information-seeking behaviour of health personnel in the Study Region. Paramedical personnel in hospitals are considered first, then health personnel associated with semi-institutions, and finally, those who are self-employed.

Hospital Sample (Paramedical Personnel): Overview

Two questions can be asked to distinguish current awareness information from information specific to a need. The first is: How do you usually become aware of any new developments in your field? The second is: What specific action did you take on the last occasion you needed information?

That there is a need for becoming aware of new developments is evidenced by the respondents' perception of change

in their profession. Fairly rapid or constant change is perceived by 55.9% of the hospital paramedical personnel. Table 1 shows that for these persons superiors represent the most popular source of current awareness information. Of the three sources usually used for current awareness, two are human resources: superiors and colleagues. In other words, current awareness among paramedics in hospitals depends largely upon a social context which fosters communication.

Whether human resources are more "important" than printed materials for current awareness is a question that comes to mind. Indicative of importance are answers the respondents gave when asked about the effectiveness of current awareness sources (Table 1). Superiors are ranked most effective by 35.6% of the respondents; periodicals are judged most effective by 22.0%; and, rather surprisingly, only 5.8% find colleagues the most effective source of current awareness information.[1] (It is surprising that colleagues should be so usually used and found so little effective.) But as to the general question of human resources vs. printed resources, it would seem that the former are more important judged both by their frequent use and by positive judgments of their effectiveness in providing current awareness information. While current awareness among health personnel in hospitals is a function

---

[1] The difference between the judged effectiveness of superiors and periodicals is significant at 0.001 (19.7, 1 df); between periodicals and colleagues the difference is significant at 0.001 (58.9, 1 df).

TABLE 1

Information Sources Used for Current Awareness (Hospital Sample)*

Source	Percentage Using Source	Percentage Judging Source "Most Effective"
Superiors	77.6%	35.6%
Colleagues	74.8%	5.8%
Periodicals	72.4%	22.0%
Newspapers, Magazines	47.3%	1.6%
Courses	43.6%	13.2%
Professional Organizations	37.2%	7.6%
Professional Meetings	32.5%	2.9%

*n_T (total responding) = 622

of a social context which fosters communication, it would seem that the communication which is relevant is not that between colleagues, but between superiors and those that are responsible to them.

Paramedical hospital personnel were asked how often they find themselves in situations for which they need information beyond what they already possess from previous training and experience. Only few (14.0%) find themselves "frequently" in such situations. Such situations are more likely to occur "occasionally" (58.6%) or only "rarely" (30.0%). What is of interest, however, is not so much how often such occasions arise, but rather the nature of the information-seeking behaviour which occurs when they do arise. Thus the question was asked: On the last occasion you had an information need what action did you take to obtain the necessary information? Table 2 shows that for information specific to a need, printed resources rank higher than human resources. Nearly two-thirds of the respondents (65.6%) reported that they looked in a book when they last had need for specific information, while only 43.4% turned to a colleague for the information. Very few (9.1%) considered going to a library. The fact that books are so often referred to and libraries are so seldom visited indicates that the books used are not found in libraries but are housed in private office or departmental collections. The implication of these results for the feasibility of a network based on existing information-

TABLE 2

Action Taken to Obtain Needed Information (Hospital Sample)*

Action Taken	Percentage Taking Action	Percentage Taking Action as the First Step
Look in Book	65.6%	22.7%
Ask a Colleague on the Sport	43.4%	40.2%
Ask a Nearby Colleague	28.0%	15.8%
Phone Someone	27.6%	7.8%
Go to a Library	9.1%	2.3%
Write Someone	2.5%	0.2%

* n_T (total responding) = 622

seeking behaviour is surely obvious.

More than one action is taken in the seeking of information, as more than one source is used for current awareness information. For this reason, the percentages in the first column of figures in Table 1 and in Table 2 do not add up to 100%. It was felt that by asking those surveyed for the first action taken in their search for information, some indication would be given of a preferred behaviour. The second column of numbers in Table 2 shows that while looking in a book is a frequent response to the need for specific information, it is not a preferred one. The preferred response is to approach a colleague.[2] Presumably colleagues are approached first as being the easiest path to information, even though it seems that for specific information, as well as for current awareness information, colleagues are viewed as not particularly effective. It is necessary, eventually, to resort to recorded information, to books, but not necessarily books in the hospital library. Of the over 600 people surveyed in the Hospital sample, only 15 went to their hospital library as a first step in a search for information and over 18% had never at any time used their hospital library.

Why are libraries approached only reluctantly? Is it because the libraries are not good, or because there is

---

[2] The difference between approaching a colleague and looking in a book is significant at 0.001 (30.4, 1 df).

something in human nature that prefers not to use libraries? To explore the potential use of hospital libraries, as distinct from present information-seeking modes, another question was asked: What types of library services would you be likely to use for work-related information? (Table 3). The answers are not uninteresting. Clearly the borrowing of books and periodicals has priority ranking - what seems surprising is the large interest in media. The borrowing of films and tape recordings takes preference even over the use of reference books and periodicals in the library. The low likelihood that health personnel working in hospitals would telephone inquiries to the hospital library suggests they do not view the library as a source of quick reference information.

These are the overall results having to do with the information-seeking behaviour of paramedical personnel in hospitals. The following pages report the results of finer analyses of the Hospital sample, by hospital size, type, and location, and by profession. In order that the overall results not be lost sight of in the discussion of these analyses, they may be briefly reviewed:

1) As sources of current awareness of information, superiors rank first, i.e. the most popular, followed by colleagues and then periodicals. Superiors are judged considerably more effective than periodicals, and colleagues very significantly less so.

2) To obtain information to satisfy a particular need,

TABLE 3

Library Services Likely to be Used for Work Related Information (Hospital Sample)*

Service	Percentage Likely to Use the Service
Books and Periodicals for Borrowing	63.3%
Films	50.8%
Tape Recordings	44.0%
S.D.I.	43.1%
Books for Reference Only	36.6%
Slides	21.1%
Periodicals for Reference Only	20.9%
Photocopy	16.5%
Telephone Inquiry	8.7%

* n_T (total responding) = 622

the usual first step taken is to ask a colleague. Presumably, this is only a beginning step in many information searches since the action most frequently resorted to is "looking in a book". Going to or telephoning the hospital library is simply not an instinctive reaction when information is needed.

3) When paramedical personnel do use the library, the service they are most likely to use for work-related information is the borrowing of books and periodicals. Borrowing tapes and films is notably popular and takes precedence over using reference books and reference periodicals in the library.

Hospital Sample (Paramedical Personnel): By Size

The size of the hospital in which a paramedical person is located is a factor that quite definitely affects his information-seeking behaviour. Health personnel in small hospitals seem to be more inclined to use library services than are those in large hospitals. Table 4 shows that the question: Have you ever used the library? was answered affirmatively by 89.7% of the respondents in small hospitals, 85.3% of those in medium hospitals and by 77.9% of those in large hospitals. The percentage difference is significant at 0.025.[3] Also there is a difference, but not a significant one, in the percentage of persons in small hospitals (as compared to the number in medium and large) who indicate "going to the library" as an action taken in obtaining information (5.0%, 4.2% and 1.8% respectively). By way of explan-

---

[3] (8.64, 2 df).

TABLE 4

Differences in Information-Seeking Behaviour Among Personnel in Small, Medium and Large Hospitals (Hospital Sample)

Hospital Size	n_x	Use of Library	Most Effective Current Awareness Source: Superiors	Action Taken to Obtain Information: Go to Library
Small	112	89.7%	26.0%	5.0%
Medium	189	85.3%	29.7%	4.2%
Large	321	77.9%	36.4%	1.8%

ation, it might be observed that, at least as far as current awareness information is concerned, health personnel in small hospitals rely significantly less on their superiors than do their colleagues in medium and large hospitals. What this suggests is that there are either fewer or less structured opportunities for communication in small hospitals and that here libraries provide the information function performed by dialogue with superiors and colleagues in large hospitals. Recorded information is substituted for verbal communication.

Actually, to say that size of hospital is indeed a factor affecting the use of hospital libraries, it must be shown that there is no hidden third factor involved. For instance, it might be argued that small hospitals are different from large ones, in that they tend to be special hospitals or that they tend to be in the country rather than in London. However, this is not the case, as can be seen from Table 5. Table 5 shows that whether in London or in the country, whether special or general, small hospitals show a greater record of library use than do large hospitals. At least as "use" is measured by the respondents' answers to the question: Have you ever used the library?[4]

---

[4] Table 5 shows the library is used least by personnel in large hospitals and within these, geographically, least by those located in London hospitals. This result, however, is suspect because the data does not allow a distinction to be drawn between small hospitals in London and special hospitals in London. They are the same. And small hospitals in the country happen all to be general hospitals. To say then that library use is least in large hospitals and attribute this to

TABLE 5

Library Use of Small, Medium and Large Hospital Libraries Cross Classified According to General-Special and London-Country (Hospital Sample)

Library Type	n_x	Use of Library	Action Taken to Obtain Information: Go to Library
General	295		
Small		88.5%	16.9%
Medium		84.4%	11.3%
Large		71.7%	8.1%
Special	327		
Small		91.1%	25.5%
Medium		86.3%	13.3%
Large		81.6%	7.6%
London	324		
Small		91.1%	25.5%
Medium		86.3%	13.3%
Large		74.7%	7.7%
Country	298		
Small		88.5%	16.9%
Medium		84.4%	11.3%
Large		82.6%	7.9%

The main result then still holds, that there is greater use of the library by health personnel in small hospitals than in large hospitals, whether the hospitals are in London or the country, or whether they are special or general. And this is true even though it is generally the case that large hospitals have better libraries than small hospitals.[5]

Hospital Sample (Paramedical Personnel): By Type

A distinction was made between general and special hospitals. Unfortunately the distinction proved to be not particularly useful. The only significant result seems to be that personnel in special hospitals are more likely to telephone someone for information than are personnel in general hospitals.[6] Personnel in general hospitals seem more likely than their special hospital counterparts to look for the needed information in a book (28.2%, 23.6%); the difference, however, is not significant. Moreover, with respect to sources for current awareness information and library use there are no interesting differences.

Initial perusal of the data suggested that a distinction between one type of special hospital, viz. psychiatric hos-

---

the fact they are in London may be misleading. The causal factor may be not that they are in London but that they are general. Actually, as much as one can say is that possibly some combined weighting of "special" and "London" makes the differences in library use significant firstly between small hospitals in London and in the country, and secondly, between small special and small general hospitals. This is borne out by a result to be discussed later, viz. that on a grosser level the special-general and London-Country distinctions are in themselves not significant.

[5] For an evaluation of the libraries surveyed, see Chapter 7. Generally, large hospitals have better libraries. C.P.R.I., a small hospital, is an exception to the general case.

[6] Significant at 0.025 (5.3, 1 df).

pitals, and all the others, might have some value. Personnel in psychiatric, as distinguished from other hospitals, use the library more. The difference is significant at 0.001.[7] They are, however, less likely than their colleagues to use reference books or media in the form of tapes or films, and more likely to borrow books and periodicals. When in need of specific information, personnel in psychiatric hospitals follow the general pattern of preferring to use books. They do this, however, less than personnel in all other hospitals, and in their search for information they use the phone more.

Hospital Sample (Paramedical Personnel): By Place

It was hoped that a distinction between hospitals in London and those in the country would reveal that there was greater use of hospital libraries in London than in the country. Indirectly this would argue for the need for increased service in country hospitals. The assumption here, of course, was that in London, hospital libraries would be used because they were adequate; and in the country they would not be used, because they were inadequate. There was a more general assumption here also, viz. that if an adequate library exists, it is used.

The London-country distinction, however, did not lead anywhere, suggesting that there might be something wrong with the assumptions just stated. Table 6 shows that personnel in country hospitals have a slightly better record

---

[7] (14.3, 1 df).

TABLE 6

Use of Library Compared with Use of Human Resources in London and Country Hospitals (Hospital Sample)

Library Location	n_x	Use of Library	Use of Library Within the Last 24 Hours?	Action Taken to Obtain Information: Ask a Colleague on the Spot
London	324	80.1%	10.3%	46.0%
Country	298	84.5%	20.7%	31.9%

of library use than their counterparts in London hospitals, as measured by overall library use ("Have you ever used the library?")[8] and recent library use ("Have you used the library within the last 24 hours?").[9] This is somewhat a reversal of what was hoped.

Some explanation for this reversal may be found in the responses to the question: On the last occasion you had an information need, what action did you take to obtain the necessary information? Significantly, personnel in London hospitals are more likely to ask their colleagues (on the spot) for information than are personnel in hospitals outside of London; the percentages are 46.0% and 32.2% respectively.[10] This again leads to the interpretation that where human resources are available, as presumably in London hospitals, they are preferred to book or library resources. Possibly the reason that library use is as heavy as it is in the country is simply that human resources are lacking.

There are differences in the preferences for library services between health workers in London and country hospitals. Table 7 shows that in the country hospitals there is a greater demand for audio-visual materials, in particular tape recordings and films. Though probably very unrelated, there seems to be a greater demand for photocopying services in London hospital libraries than in libraries in country

---

[8] Not significant.
[9] Significant at 0.005 (10.2, 1 df).
[10] Significant at 0.001 (12.3, 1 df).

TABLE 7

Library Services Likely to be Used for
Work Related Information (Hospital Sample)

Location of Hospital	n_x	Tape Recordings	Films	Photocopying
London	324	34.0%	34.3%	25.6%
Country	298	45.0%	52.7%	18.1%

hospitals.[11]

Hospital Sample (Paramedical Personnel): By Profession

The nine professional groups surveyed in the hospital sample are the following: Nurses, Registered Nursing Assistants, Technicians, Medical Record Personnel, Therapists, Social Workers, Dietitians, Hospital Administrators, and Miscellaneous. There are differences in information-seeking behaviour among the nine professional groups; however, the recognition of patterns of behaviour is somewhat difficult.

It will be remembered that colleagues, superiors and periodicals are the information sources usually used by hospital personnel for current awareness. Social Workers, Technicians, Nurses, and Registered Nurses' Assistants rank ahead of the other professions in their dependence on superiors

---

[11] If we hold size fixed, and compare London and Country hospitals, we do find some interesting differences, especially when the size is fixed at "small". For instance, in action to obtain information, 25.5% in London-small hospitals as compared to 16.9% in country-small hospitals elected to "go to the library". And 9.5% in London, as compared to 1.8% in the country, indicated "going to the library" as the likely first step in a search. However, no information can be drawn from this data, since, as mentioned earlier, the small hospitals in London are also special hospitals, and in the country the small hospitals are general hospitals. That is, the observed difference may be attributable to the fact that the hospitals being compared were special and general, and not to the fact that they were in London and the country. And, as mentioned previously, since in the larger picture the special-general and London-Country distinctions are not significant, it is probably some combined weighting of "special" and "London" which makes the difference significant between small hospitals in London and the country. This is confirmed by looking at medium hospitals in London and the country, and then at the corresponding large hospitals. There are no significant differences to be found. In general, then, it is not possible to argue for a London-Country effect.

- and, as it turns out, in their positive judgment of the effectiveness of superiors for current awareness information. Table 8 shows these four professions lie well above the mean (19.4%) in their percentage response to the question asking for the most effective source of current awareness information. Interestingly, these same professions rank below the general mean in their dependence on colleagues for this information. Except for technicians, the same professions rank below the mean in their use of periodicals for current awareness information.

Dietitians, Medical Record Personnel, Hospital Administrators, Therapists, and Miscellaneous display a quite different profile. Unlike the professions just discussed, they rank below the general mean in their dependence on superiors and in positive judgment of their effectiveness. Also unlike these professions, they rank above the mean in their dependence on both colleagues and periodicals for current awareness information.

The above observations indicate that dependence upon colleagues and dependence upon superiors for current awareness information are inversely correlated. In most cases, if hospital personnel rank above the mean in their dependence on superiors, they will rank below the mean in their dependence upon colleagues and upon periodicals, and vice versa. An exception is the Medical Record Personnel who rank below the mean with respect to both kinds of dependence.

TABLE 8

Percentages Judging Superiors the Most Effective Source of Current Awareness Information (Hospital Sample)

Profession	n_x	Percentage Judging Superiors Most Effective
Dietitians	31	3.2%
Medical Record Personnel	27	3.8%
Miscellaneous	37	8.1%
Therapists	47	8.9%
Hospital Administrators	35	15.6%
Social Workers	28	22.2%
Technicians	85	25.0%
Nurses	166	32.4%
Registered Nursing Assistants	166	55.3%

Weighted Mean = 19.4%, Median = 15.6%, s.e. = 0.01

Further, on the basis of the above observations, paramedical personnel working in hospitals may be classified into those for whom information-seeking is an autonomous activity and those for whom it is not. The definition of autonomous would be those professions whose dependence upon superiors (as measured by their positive judgment of superiors' effectiveness as sources of current awareness information) rank below the general mean. Dietitians, Therapists, Hospital Administrators, Medical Record Personnel, and Miscellaneous fall into the autonomous group; the other professions, Registered Nurses' Assistants, Social Workers, Nurses and Technicians fall into the nonautonomous group. The difference between the autonomous and nonautonomous groups with respect to dependence upon superiors is significant at 0.001.[12] Generalizing, it can be said that autonomous information-seekers depend mostly on periodicals as well as on their colleagues for current awareness information; nonautonomous information-seekers tend to rely on their superiors for this information.

It is interesting at this point to look at the question: Which library services would you be most likely to use for information related to your work? in terms of autonomy. Table 9 shows that the general sample result holds for both groups, viz. the first preference is for the borrowing of books and periodicals. There are differences, however. The nonautonomous group has a special interest in audio-visual

---

[12] (58.7, 1 df).

TABLE 9

Library Services Likely to be Used for Work Related Information by Autonomous and Nonautonomous Hospital Personnel (Hospital Sample)*

Source	Autonomous	Nonautonomous
Books and Periodicals for Borrowing	73.4%	61.8%
Films	21.7%	30.9%
Tape Recordings	24.4%	29.6%
S.D.I.	36.6%	30.4%
Books for Reference Only	33.0%	27.9%
Periodicals for Reference Only	35.6%	30.9%
Photocopy	24.0%	12.0%
Telephone Inquiry	14.1%	7.9%
Slides	12.8%	14.8%

* n_A (total autonomous responding) = 177

n_n (total nonautonomous responding) = 445

materials. The only library services they are more likely to use than the autonomous group are films, tape recordings and slides. Breaking down by profession, Nurses and Registered Nursing Assistants are the ones particularly interested in films and tape recordings, while Technicians are interested in slides.

A final question addressed to the paramedical personnel working in hospitals sought to determine preferences for the location of library services. ("If a library service were available to you for information connected with your work, which location would you find it most convenient to visit - assuming it was not at your place of work?") Nearly half (47.6%) would find the public library a convenient location, while only 38.8% would prefer location in a local hospital. The difference is significant at 0.025,[13] but not much should be made of this in that the question barred respondents from choosing the library in the hospital where they work as the most convenient location.

Semi-institutional Sample: Overview

The information-seeking behaviour of health personnel in semi-institutions is rather similar to those in hospitals. Over 50% in both groups perceive their field as being in a state of rapid or constant change, but whereas hospital personnel depend first on superiors as the usual source of current awareness information, for semi-institutional personnel

---

[13] (5.1, 1 df).

it is periodicals that rank first, with superiors falling to fourth place (see Table 10).[14] The difference in dependence upon superiors is hardly surprising in that many semi-institutional personnel work in environments which are not highly structured; one would expect them on the whole to be more autonomous than hospital personnel, depending less on superiors and more on periodicals and colleagues for current information. Semi-institutional personnel tend also to rely more than hospital personnel on notices from professional organizations to keep them up to date on new developments in their field.

As to the effectiveness of the various sources of current awareness information, the two sample groups are similar in doubting the effectiveness of their colleagues, though continuing to depend upon them for current awareness. Only 7.8% of the semi-institutional personnel judge their colleagues to be the most important source of new information, while 73.5% regard them as a usual source. For both samples, the source found most effective is periodicals (by 33.6% in the Semi-institutional sample and 35.6% in the Hospital sample); and for both samples, superiors second in effectiveness.[15]

Health personnel in semi-institutions are also similar to those in hospitals in their response to the question: On the last occasion you had an information need, what action did

---

[14] 77.6% of the hospital paramedical personnel regard superiors as a usual source of current awareness information compared to 57.8% of the semi-institutional personnel.

[15] The differences are not significant.

TABLE 10

Information Sources Used For Current Awareness
(Semi-institutional Sample)*

Souce	Percentage Using Source	Percentage Juding Source "Most Effective"
Periodicals	88.1%	33.6%
Colleagues	73.5%	7.8%
Professional Organizations	59.7%	13.5%
Superiors	57.8%	25.4%
Newspapers, Magazines	56.3%	2.5%
Professional Meetings	48.5%	6.6%
Courses	39.2%	10.7%

* n_T (total responding) = 268

you take to obtain the necessary information? Both groups cite "looking in a book" as the obvious first action, but the semi-institutional personnel do so significantly more than paramedics in hospitals (Table 11).[16] Going to a library is a most unusual action. Semi-institutional personnel seem to be as reluctant as hospital personnel to seek information in a library. Out of a sample of 268, only six (three of whom were nurses) thought of going to a library as the first step in obtaining needed information. However, a high percentage of the semi-institutional personnel have at some time made use of their "library" (83.5%) and nearly half (47.0%) concede that it is extremely useful.[17] The corresponding percentages for the Hospital sample are 82.1% and 56.3%.

Like paramedics working in hospitals, most semi-institutional personnel find only occasionally do they need information in their daily work beyond what they already possess.[18] The few who frequently find themselves in this situation say, quite naturally, they find it very important to keep updated, and cite periodicals as the most effective means of becoming aware of new developments in their field.

Compared with the Hospital sample, a somewhat different ranking of library services likely to be used is given by the Semi-institutional sample (Table 12). While both semi-

---

[16] Significant at 0.001 (11.0, 1 df).

[17] The difference in judging the library extremely useful is significant at 0.025 (6.2, 1 df).

[18] Frequently 16.1%, occasionally 57.6%, rarely 26.3%.

TABLE 11

Action Taken to Obtain Needed Information (Semi-institutional Sample)*

Action Taken	Percentage Taking Action	Percentage Taking Action as the First Step
Look in Book	65.3%	37.2%
Phone Someone	38.4%	21.8%
Ask a Colleague on the Spot	26.5%	23.9%
Ask a Nearby Colleague	19.0%	13.7%
Go to Library	9.3%	2.6%
Write Someone	3.0%	0.9%

* n_T (total responding) = 268

TABLE 12

Library Services Likely to be Used for Work-Related Information
(Semi-institutional Sample)

Profession	n_x	Books and Periodicals for Borrowing	Periodicals for Reference Only	Books for Reference Only	Tape Recordings	Slides	Films	Photocopy	Telephone Inquiry	S.D.I.
Pharmacists	63	39.7%	42.9%	54.0%	17.5%	3.2%	6.3%	20.6%	31.7%	34.9%
Nurses	124	75.0%	25.8%	27.4%	36.3%	35.5%	51.6%	25.0%	24.2%	62.1%
Dental Hygienists	25	68.0%	28.0%	20.0%	20.0%	40.0%	44.0%	8.0%	4.0%	36.0%
Health Inspectors	24	62.5%	62.5%	70.8%	16.7%	33.3%	62.5%	33.3%	8.3%	66.7%
Technicians	25	48.0%	16.0%	36.0%	4.0%	24.0%	8.0%	16.0%	8.0%	32.0%
Psychosocial Personnel	7	100.0%	57.1%	42.9%	57.1%	14.3%	28.6%	42.9%	0.0%	71.4%
Mean		63.1%	33.2%	38.1%	26.1%	26.5%	36.6%	22.8%	20.5%	53.0%

institutional and hospital personnel see the borrowing of books and periodicals as their most likely use of the library (63.1%, 63.3%), the semi-institutionals seem much less interested in borrowing audio-visual materials, such as tapes and films. On the other hand, they are considerably more interested in Selective Dissemination of Information (S.D.I.) and telephone enquiry services, bespeaking more than hospital personnel a wish for information tailored to their needs.

The semi-institutional personnel were asked at which location they would find a library convenient, assuming there was none at their place of work. The public library is preferred by 44.8%, while only 17.9% favour a local hospital library.

Semi-institutional Sample: By Profession

Looking at the Semi-institutional sample not as an aggregate but in terms of the individual professions represented, it is seen that the Pharmacists and Psycho-social Personnel are least dependent on their superiors for current awareness information. The percentages are 22.2% and 0.0% respectively, while the sample mean is 88.1%. For the most part, Pharmacists have no superiors. As for the Psycho-social Personnel, their hierarchical relationship to superiors may be more administrative than informative in function.[19] The professions which are most dependent upon their superiors for current awareness information are the Nurses and Dental

---

[19] Strictly, it is not possible to generalize about Psycho-social Personnel as the sample taken was small.

Hygienists (78.2%, 72.0%).

The usual reply to the question about the first step taken in a search for information is "look in a book". The Dental Hygienists are an exception. Neither are they inclined to visit a library, write a letter, or telephone for information. Generally they will ask a colleague on the spot or one nearby for the information they need. Not surprisingly, nearly two-thirds of the Dental Hygienists report having no library available to them where they work; 72.7% report not having used a library and only 16.0% could imagine a library being extremely useful. However, they rank high in their interest in having an S.D.I. service (56.0%, sample mean 53.0%).

Though Nurses in the Semi-institutional sample are as dependent as Dental Hygienists upon superiors for current awareness information (78.2%), when it is information they need for a specific purpose, they are unlike Dental Hygienists in that they will look in a book or telephone someone. They are not apt to ask colleagues for the information. Nurses' use of the library is high. Only 7.4% report not having used the library at their place of work. (The sample mean is 16.5%).

Public Health Inspectors and Pharmacists rely more than other respondents on professional organizations to keep them informed of new developments in their work. Public Health Inspectors use the library at their place of work more than any other of the professions in the Semi-institutional sample (95.8%). In the listing of library services likely to be

used, they rank before the other professions in their interest in using reference books and periodicals in the library, borrowing films and having an S.D.I. service.

The profile for Pharmacists is similar to that for the Public Health Inspectors but not quite so exaggerated. They are second in their frequency of using the library (following Public Health Inspectors) and in their interest in using reference books in the library. Unlike Public Health Inspectors, they are not particularly interested in borrowing films.

Technicians more than the other semi-institutional professions rely on colleagues for information specific to a need. They are particularly unlikely to use reference books and periodicals, and generally they rank below the sample mean in their likelihood of using any library services.

Self-employed Sample

Like the Hospital sample and the Semi-institutional sample, approximately half (53.3%) regard the library as extremely useful. This sample includes the most highly educated of the professions sampled: Doctors, Dentists and Others (Optometrists, Chiropractors and Osteopaths). It might have been expected that a larger percentage of these professions would find the library extremely useful. Breaking down the results by profession, considerable variance is seen: 61.5% of the Doctors find the library extremely useful, while only 31.9% of the Dentists hold the library in such regard.

The difference is significant at 0.001.[20] Possibly there is not much need for these people to depend on libraries; possibly personal collections are sufficient to satisfy their information needs.

As to action taken when information is needed, the respondents in the Self-employed sample reacted much the same as other respondents in ranking "looking in a book" first (Tables 13 and 14). However, in this sample a significantly higher percentage cite "looking in a book" - 71.6% as compared with 65.6% for the Hospital sample and 65.3% for the Semi-institutional sample. Breaking down the percentages for Doctors and Dentists individually, again variance is shown (73.9% and 59.2% respectively). Also Doctors more than Dentists are apt to ask colleagues on the spot for information (36.5% and 16.3%), while Dentists are more likely to telephone for needed information (27.2%, 8.4%).[21] For both Doctors and Dentists any action to obtain information other than looking in a book or asking a colleague would be unusual, most of all going to a library.

Concerning library services likely to be used for work-related information, the Self-employed sample shows a greater reliance on print materials than is evidenced by the Hospital and Semi-institutional samples (Table 15). For all three

---

[20] (12.4, 1 df).

[21] Only the difference with respect to telephoning is significant: 0.010 (7.0, 1 df).

TABLE 13

Action Taken to Obtain Needed Information
(Self-employed Sample)

Profession	n_x	Look in Book	Ask a Colleague on the Spot	Phone Someone	Ask a Nearby Colleague	Write Someone	Go to Library
Doctors	115	73.9%	36.5%	27.8%	15.7%	7.8%	6.1%
Dentists	49	59.2%	16.3%	40.8%	22.4%	12.2%	0.0%
Others	17	76.5%	47.1%	47.1%	17.6%	0.0%	0.0%
Weighted Mean		71.6%	33.7%	31.0%	16.9%	8.1%	4.8%

TABLE 14

First Step in Action Taken to Obtain Needed Information
(Self-employed Sample)

Profession	n_x	Look in Book	Ask a Colleague on the Spot	Phone Someone	Ask a Nearby Colleague	Go to Library
Doctors	115	50.6%	24.1%	8.4%	8.4%	8.4%
Dentists	49	45.5%	21.2%	27.3%	6.1%	0.0%
Others	17	62.5%	31.3%	0.0%	6.3%	0.0%
Weighted Mean		50.6%	24.2%	10.7%	7.9%	6.5%

TABLE 15

Library Services Likely to be Used for Work-Related Information
(Self-employed Sample)

Profession	n_x	Books and Periodicals for Borrowing	Periodicals for Reference Only	Books for Reference Only	Tape Recordings	Slides	Films	Photocopy	Telephone Inquiry	S.D.I.
Doctors	115	62.6%	49.6%	55.7%	30.4%	12.2%	15.7%	35.7%	14.8%	38.3%
Dentists	49	55.1%	32.7%	44.9%	46.9%	9.1%	22.4%	26.5%	14.3%	32.7%
Others	17	64.7%	23.5%	35.2%	70.6%	23.5%	41.2%	5.9%	0.0%	47.1%
Weighted Mean		61.5%	45.4%	52.8%	35.3%	12.3%	18.2%	32.6%	13.9%	37.1%

samples the first priority is for the borrowing of books and periodicals. But unlike the semi-institutional and hospital personnel, the self-employed are also very likely to use reference books and periodicals in the library and, except for the Others category, they are singularly uninterested in films.

Of the Doctors sampled, 75.5% would find information services most conveniently housed in a local hospital. The first location preference for Dentists is the public library. (30.6%).

Summary Conclusions

1) The most frequently cited sources of current awareness information are superiors, colleagues and periodicals. In the Hospital sample superiors are cited most frequently, followed by colleagues, and then periodicals. Superiors are judged considerably more effective than periodicals and colleagues significantly less so. In the Semi-institutional sample, periodicals are cited most often as the usual source of current awareness information. For the Semi-institutional sample there is less dependence upon superiors, though superiors are judged effective in providing awareness of current developments; and professional organizations have a greater role to play in supplying such information. As in the Hospital sample, colleagues are cited as a usual source of current awareness information and they are thought relatively ineffective in providing it.

2) To obtain information to satisfy a particular need, the action most frequently cited in all three samples is "looking in a book". Looking in a book is also the usual first step taken in an information search, except for members of the Hospital sample who more often turn first to a colleague for help. One action which is decidedly not taken when information is needed for a specific purpose is to go to a library. Only 15 of the 622 in the Hospital sample and six of the 268 in the Semi-institutional sample thought to go immediately to the library when they last needed information.

3) Despite the fact that so few of the respondents report going to the library when they have an information need, a good number of them have at least made some use of the library where they work, 81.2% in the Hospital sample and 83.5% in the Semi-institutional sample. Within the Hospital sample there is more use of the library by personnel in small hospitals.

4) For all three samples the library service most likely to be used for work-related information is borrowing books and periodicals. In the hospital sample the borrowing of tapes and films is quite popular and takes precedence over using reference books and periodicals in the library. In the Semi-institutional sample there is considerably less interest in borrowing audio-visual materials, and a much greater interest in S.D.I. and tele-

phone enquiry services. The predominate interest in the Self-employed sample is for print materials. After "borrowing books and periodicals", their preference is for using books and periodicals in the library. For Dentists as well as the professions in the Semi-institutional sample, the preferred location for an information service is the public library. For all others the preference is for a local hospital.

Comment

Although the data is not structured in such a way as to give conclusive evidence, the suggestion is given that a health professional's information-seeking behaviour, including his use of the library and his preferences in library services, is related to his autonomy and the structure of his working environment. Autonomy and social structure are not independent factors and it is difficult to tell the degree to which each is operative. In a societal environment such as a large hospital, colleagues and superiors are turned to for current and specific information. In environments where there is a less structured community of workers, such as in small hospitals and semi-institutions, these kinds of information must be obtained from other sources, including the library. Except for the provision of audio-visual materials, the library can be, perhaps of little use to nonautonomous professions in supplying

current awareness information or information specific to a need. For instance, nonautonomous hospital professions seem to expect their superiors to fulfill information-providing functions, whereas the more autonomous hospital professions turn to periodicals and colleagues. Semi-institutional professions, which for the most part are autonomous, expect professional organizations to update them in their work and they are interested in S.D.I. and telephone enquiry services. The most autonomous of all professions sampled, the Doctors, show a strong preference for print materials and little inclination to believe the library is extremely useful.

CHAPTER V

CONTINUING EDUCATION

The questionnaire was concerned with three aspects of continuing education: (1) the use of the library by those enrolled in continuing education courses, (2) the extent to which books are required and borrowed for these courses, and (3) the use of the library and the requirement for books of those actually teaching continuing education courses.[1]

Hospital Sample (Paramedical Personnel): Overview

Of the entire hospital sample, 36.5% are enrolled in a course. Of these, 90.7% use the library at their place of work [2] (Table 1). The need for books in connection with continuing education courses is relatively little. Only 60.8% say that they require books for their courses. This is perhaps because many of the courses include practical work, as well as academic; some seminars or workshops may not require books at all. In fact, of those who teach

---

[1] See questions 15 to 22 on the questionnaire.

[2] Library use is measured by the question: "Have you ever used the library at the place where you work?"

TABLE 1

Continuing Education by Use of Library and Books Required (Hospital Sample)*

Continuing Education	Use of Library	Books Required
Awareness of Continuing Education Courses	84.3%	-
Enrolled in a Course	90.7%	60.8%
Teaching a Course	100.0%	84.2%

* n_T (total responding) = 622

courses, only 84.2% indicate that they assign readings. Where books are required, however, almost half of the paramedical personnel in hospitals (43.3%) borrow them from the hospital library (Table 2).

In connection with the continuing education variable a question of special interest is whether enrollment in continuing education courses affects library use. Table 2 shows that in the use of the library, in the borrowing of books and, in particular, in the borrowing of books from the hospital library, continuing education has a significant role to play. Between those enrolled in courses and those who are not, the difference in library use is significant at 0.001,[3] and the difference in the borrowing of books is significant at 0.001.[4]

In their response to a question about the ease of borrowing books (very easy, satisfactory, very difficult), hospital workers enrolled in courses and those who are not differ significantly in their answers.[5] Both groups generally find it "easy to borrow the books they need" (34.1% and 35.9% respectively). However, of the two groups, more of those not enrolled in a course say that they find it very difficult to borrow books (25.6% compared to 8.7%). Interestingly enough, similar percentages (94.3%, 90.8%) find the library moderately to extremely useful (Table 3). In other words, while difficulty of borrowing books is significantly affected

---

[3] (8.1, 1 df).
[4] (93.7, 1 df).
[5] Significant at 0.005 (13.2, 2 df).

TABLE 2

Use of Library, Books Required and Borrowing of Books - Comparison of Those Enrolled in Continuing Education Courses and Those not Enrolled in Courses (Hospital Sample)*

Continuing Education	Use of Library	Books Required	Borrow Books	Borrow Books from Hospital Library
Enrolled in a Course	83.4%	60.8%	45.3%	43.3%
Not Enrolled in a Course	77.7%	72.5%	9.6%	12.5%

*n_T (total responding) = 622

TABLE 3

Use of Library at Place of Employment and Subjective Evaluation of its Worth (Hospital Sample)*

Continuing Education	Is there a library where you work?	Have you used it?	How useful did you find it?	
Enrolled in a Course	96.0%	83.4%	Not useful	0.0%
				5.7%
			Moderately	13.5%
				18.8%
			Extremely useful	62.0%
Not Enrolled in a Course	93.1%	77.7%	Not useful	3.2%
				5.9%
			Moderately	19.7%
				18.2%
			Extremely useful	52.9%

*n_T (total responding) = 622

by the continuing education variable, opinion of the library's usefulness is not. This may be an attitudinal dimension. Medical personnel who are involved in continuing education courses may simply be more familiar with the library and thus find it less difficult to use.

Those enrolled in continuing education courses and those not enrolled have similar preferences for library services (Table 4). For instance, in response to "library services they would be likely to use", 68.0% of those taking courses indicate a preference for circulating materials; of those not taking courses the percentage is 64.0%. Similarly for other types of library services - no interesting differences in preferences can be discerned between the continuing education and the noncontinuing education groups.

Hospital Sample (Paramedical Personnel): By Hospital Size

The largest number of hospital personnel engaged in continuing education is found in the medium hospitals (44.1%) - almost 10% more than in large hospitals, and 15% more than in small hospitals [6] (Table 5). One might speculate about the reason for this difference. Small hospitals may lack facilities, either in the hospital or in the surrounding community, for continuing education courses. Large hospitals which presumably have these facilities may, in addition, have personnel who are already highly trained and thus do not have such a great need for continuing education courses.

---

[6] The difference is significant at 0.10 (10.1, 2 df).

TABLE 4

Library Services Likely to be Used for Work Related Information (Hospital Sample)*

Type of Service	Enrolled in a Course	Not Enrolled in a Course
Books and Periodicals for Borrowing	68.0%	64.0%
S.D.I.	47.3%	48.2%
Books for Reference Only	44.8%	39.4%
Films	41.4%	44.5%
Tape and Recordings	37.4%	39.9%
Periodicals for Reference Only	29.1%	26.6%
Photocopy	26.1%	20.4%
Slides	20.2%	19.3%
Telephone Enquiry	7.4%	13.0%

* n_T (total responding) = 622

TABLE 5

Percentages Enrolled in Continuing Education Courses, Books Required and Use of Library by Size of Hospital (Hospital Sample)*

Continuing Education	Small	Medium	Large
Enrolled in a course	29.0%	44.1%	34.3%
Books Required	79.5%	53.8%	67.1%
Library Use	89.7%	85.3%	77.9%

* n_T (total responding) = 622

The fact that personnel in small hospitals are least involved in continuing education programmes is surprising in light of the finding that it is these people who use the library the most (Table 5). However, it may be that those who are not taking a course are precisely the ones who need to use the library most for current awareness information and who have the most time to use the library. This may also be true especially because people in small hospitals include fewer recently qualified health workers.

When involvement in continuing education is correlated with library use, there is virtually no difference with respect to hospital size. In hospitals of all sizes, about 88% of those enrolled in continuing education courses use the library (Table 6). Library use is 20% less in small, 30% less in medium, and 25% less in large hospitals for those not enrolled in continuing education courses.

There is no significant difference with respect to hospital size on the question of book requirements for courses. Of those in small hospitals who are enrolled in courses, 73.1% say that they require books for these courses; in medium hospitals, 53.2% require books and in large hospitals 63.5%, giving additional support to the finding that book resources assume a greater importance in small hospitals where human resources may be limited. Of those teaching courses, in large hospitals, only 76.9% say that books are required for their courses, while in small and medium hospitals 100% require them (Table 6).

TABLE 6

Continuing Education, Books Required and Use of Library in Small, Medium and Large Hospitals (Hospital Sample)*

	Small Hospitals	Medium Hospitals	Large Hospitals
Awareness of further education courses, plus use of library	91.3%	85.5%	81.5%
Enrolled in a course, plus use of library	91.7%	86.3%	88.0%
Enrolled in a course, plus book requirements	73.1%	53.2%	63.5%
Teaching a course, plus library use	100.0%	100.0%	100.0%
Teaching a course, plus books required	100.0%	100.0%	76.9%

* n_T (total responding) = 622

Of those who borrow books for their courses, the highest percentage is in medium hospitals (77.3%). Large and small hospitals follow closely with 72.1% and 66.7% respectively. The differences are not significant. Again, when it comes to borrowing from the hospital library, the medium hospital group ranks first. Of those engaged in continuing education in medium hospitals, 76.3% borrow materials from the hospital library, compared to 64.4% in large hospitals, and 57.1% in small hospitals. Not surprisingly, more of those in medium hospitals find it easy to borrow books - 60% compared to 54.5% in small hospitals and 40% in large hospitals (Table 7).

Hospital Sample: By Professional Groups

As was mentioned, of the entire Hospital sample, 36.5% are enrolled in a continuing education course. The breakdown by professional groups can be seen in Table 9. No distinct categorization can be applied to library use among the professional groups. It can be said, however, that the group with the largest percentage of its members involved in continuing education is the Dietitians. Nurses, Technicians, and Miscellaneous also rank above the mean. More than 75% of all groups except R.N.A.'s (69.7%) have used the library at their place of work.

Referring specifically to library use by the individual professional groups involved in continuing education courses, a pattern similar to that of the entire sample emerges. In comparing library use by those enrolled in courses with library use by those who are not, it is found that enrollment in courses is correlated with increased library use in every case but one,

TABLE 7

Borrowing of Books by Those Enrolled
in Continuing Education Courses (Hospital Sample)

Hospital Size	n_x	Percentage which borrow books	Percentage which borrow from hospital library
Small	112	66.7%	57.1%
Medium	189	77.3%	76.3%
Large	321	72.1%	64.4%

TABLE 8

Borrowing of Books by Those Not Enrolled
in Continuing Education Courses (Hospital Sample)

Hospital Size	n_x	Percentage which borrow books	Percentage which borrow from hospital library
Small	112	33.3%	42.9%
Medium	189	27.7%	23.7%
Large	321	27.9%	35.6%

TABLE 9

Continuing Education, Books Required and Library Use
By Profession (Hospital Sample)

Profession	n_x	Enrolled in a Course	Books Required	Library Use
Therapists	47	36.4%	65.2%	86.7%
Social Workers	28	27.3%	75.0%	80.8%
Nurses	166	41.8%	72.5%	85.9%
R.N.A.'s	166	29.6%	43.2%	69.7%
Technicians	85	42.0%	76.9%	88.0%
Medical Record Personnel	27	27.3%	58.3%	76.9%
Dietitians	31	52.0%	29.4%	80.0%
Hospital Administrators	35	22.6%	88.9%	84.8%
Miscellaneous	37	41.7%	76.2%	100.0%

where 100% of the Miscellaneous group use the library whether they are involved in courses or not (Table 10).

Semi-institutional Sample

Similarly to the Hospital sample, 36.6% of those in the Semi-institutional sample are enrolled in continuing education courses. Nearly 40% use the library, and as many feel that they require books. The breakdown by professional groups can be seen in Table 12.

Of those respondents enrolled in a course, 38.9% use the library, compared to 61.2% who use the library but are not enrolled in courses.[7] A somewhat larger percentage than in the Hospital sample requires books in connection with courses they are taking (67.1%). Significantly, books are borrowed by almost twice as many of those in a course as those not in a course.[8] About the same number in the two groups borrow books from a hospital library (Table 11). More of those enrolled in a course, than those who are not, find the borrowing of books to be "very easy" (81.8%, 18.2%). However, about the same percentage in both groups find it "very difficult" (Table 11). Overall differences with respect to ease of borrowing are not significant.

In the Semi-institutional sample, enrollment in a continuing education course is not correlated with increased library use. In fact, more of those not enrolled in a course

---

[7] The difference is not significant (0.82, 1 df).
[8] Significant at 0.001 (14.3, 1 df).

TABLE 10

Library Use by those in Continuing Education Courses Compared to Those not Enrolled in Courses (Hospital Sample)

Profession	n_x	Enrolled in a Course plus Library Use	Not enrolled in a Course plus Library Use
Therapists	47	93.8%	80.8%
Social Workers	28	100.0%	80.0%
Nurses	166	88.7%	84.1%
R.N.A.'s	166	73.0%	64.4%
Technicians	85	93.5%	85.0%
Medical Record Personnel	27	80.0%	68.8%
Dietitians	31	84.6%	66.7%
Hospital Administrators	35	100.0%	79.2%
Miscellaneous	37	100.0%	100.0%

TABLE 11

Use of the Library, Books Required, and Borrowing of Books by Those Enrolled in Continuing Education Courses, Compared to Those not Enrolled (Semi-institutional Sample)*

Continuing Education	Use of library	Books Required	Borrow Books	Borrow books from hospital library
Enrolled in a Course	38.9%	67.1%	61.9%	50.0%
Not Enrolled in a Course	61.2%	32.9%	38.1%	50.0%

* n_T (total responding) = 268

TABLE 12

Continuing Education, Use of Library, Books Required and Borrowing of Books by Profession (Semi-institutional Sample)

Profession	n_x	Enrolled in a course	Use of Library	Books Required	Borrow Books	Borrow from Hospital Library
Pharmacists	63	42.6%	91.8%	51.3%	1.6%	3.2%
Nurses	124	28.2%	92.6%	69.8%	16.9%	2.4%
Dental Hygienists	25	52.2%	27.3%	25.0%	4.0%	0.0%
Health Inspectors	24	82.6%	95.8%	90.5%	58.3%	20.8%
Technicians	25	4.8%	52.4%	100.0%	20.0%	16.0%
Psycho-social Personnel	7	0.0%	100.0%	100.0%	14.3%	0.0%

use the library. This finding is not consistent with what might be expected or with results for the Hospital sample. The difference in library use by the continuing education and noncontinuing education groups in the Semi-institutional sample is not significant. Moreover, a fairly high number of respondents did not answer the question about library use. Nevertheless, some explanation might be given why continuing education does not affect library use in the Semi-institutional sample. Possibly many members of this sample have no libraries close at hand and must obtain their materials elsewhere. Possibly their continuing education courses are of a practical nature; they may not be traditional courses, but workshops or short seminars.[9]

Self-employed Sample

Enrollment in courses varies greatly between the Doctors and Dentists, and the Other group. What is notable is that excluding the Other category, over 86% of the Doctors and 73% of the Dentists questioned are not formally enrolled in continuing education courses. This contrasts with the results for the Hospital and Semi-institutional samples, where the percentages not involved in continuing education are respectively 73.5% and 61.1%. A plausible explanation for this is that Doctors and Dentists have little time to participate in programmes of continuing education.[10]

---

[9] See the conclusion to this Chapter.
[10] See Chapter VI.

TABLE 13

Percentages Enrolled in Continuing Education Courses by Profession (Self-employed Sample)

Profession	n_x	Enrolled in a Course	Not Enrolled in Course
Doctors	115	13.2%	86.8%
Dentists	49	26.7%	73.3%
Other	17	31.3%	68.7%

The location of the library used by private practitioners enrolled in courses varies considerably: 14.4% of the Dentists and 19.2% of the Doctors use the University of Western Ontario medical library; over 11.4% of the Doctors use a hospital library, while 20% of the Dentists indicate that they use a hospital library; only 7.1% of the Doctors use the public library, compared to 40.0% of the Dentists. In other words, Dentists involved in continuing education use all types of libraries more than do Doctors taking courses. It seems that Doctors simply do not, for the most part, involve themselves in programmes of continuing education, and when they do, they do not depend especially on library resources.

Comments

Comments on continuing education were written on some of the returned questionnaires. Fifteen persons in the Hospital sample wrote of the need for professional updating by means of short refresher courses, day seminars, in-service education, workshops, or staff meetings, owing to the rapid change in the nature of their work and new developments in their professional field. Four expressed a wish to learn of and attend such courses. Eight voiced deterrants to attending such courses, such as the distance from the place where courses are held, night-shift work, and lack of incentive or job satisfaction. One nurse commenting on her

present situation wrote:

> I have worked previously in a very modern hospital ... which offered extremely good in-service courses and which was constantly changing for the better. Every day there were changes in the nursing profession which we as nurses were given a chance to try and evaluate. Most of them have proven effective and are used, and so much time has been saved in which we were able to give better patient care. Where I work now everything seems static. There is not time to read printed material at work and you aren't allowed to take it home. There are very rarely any demonstrations or staff meeting to discuss new techniques.

Conclusion

In the medical setting, continuing education has a special meaning. In addition to the traditional definition of day or evening classes, the allied health professions make use of short seminars, workshops, and special lectures. The questionnaire, although it recognized this difference, was unclear as to its importance. For instance, although only 262 of the 622 respondents said that they were directly involved in a continuing education course, more than 400 described the type of course they were presumably involved in, including short refresher courses, and conferences. This discrepancy suggests either that some of those engaged in continuing education are taking two or more types of courses, or that the definition of continuing education is unclear not only in the questionnaire, but also in the minds of the respondents. This problem of definition must be kept in mind when considering the impact of continuing education on library use. The information-seeking behaviour of hospital

workers taking regularly scheduled courses may be significantly different from that of those attending seminars, workshops or special lectures.

In connection with this, it has been postulated that the type of training can have a strong impact on continuing education behaviour.[11] Those professions whose preliminary training stresses current awareness via some continuing education method may be more prone to enroll in continuing education courses. This factor might also be related to library use, especially if libraries are seen as a method of continuing education.

Other factors which may directly affect continuing education are membership in a professional organization, the need for current awareness on the job, and the perceived rate of change in the profession. Professional organizations stressing continuing education can make it compulsory for their members to update their credentials periodically, through courses sponsored by the professional association.[12] Those respondents who feel that their job requires continuous

---

11 The Report of the University of Western Ontario, Faculty of Medicine's Committee on Continuing Medical Education suggests that there is a strong relationship between participation in programmes of continuing education and whether an appropriate understanding of its methods and importance have been inculcated at the undergraduate level. [Committee on Continuing Medical Education, Report (London: University of Western Ontario, Faculty of Medicine, 1971-72).]

12 The U.W.O. Report also suggests that professional organizations have an obligation to define and to meet continuing education needs by sponsoring such programs, and that periodic recertification of all health workers would increase the importance of continuing education programmes.

updating may be more prone to seek this updating through courses than through other current awareness methods.

Since the information-seeking behaviour of those engaged in continuing education courses has a direct bearing on libraries, the motivations for continuing education are very important. The questionnaire does not delve into such motivations, and before any final analysis is made concerning the role of hospital library users taking continuing education courses, this area must be pursued further. For example, 60.6% of the Hospital sample taking continuing education courses considers that their profession is changing fairly rapidly or constantly. This could represent an implicit felt need for more information, a need which could be answered by continuing education courses.

As was noted with the Hospital sample, enrollment in continuing education courses is correlated with a significant increase in library use. Also, for this sample, there is a positive correlation between enrollment in courses and the borrowing of books. It is interesting to speculate on the use of audio-visual materials in the teaching of continuing education courses. While the data are not revealing in this respect, it may be that slides, films, tapes, etc., would be especially appropriate for courses of a nontraditional nature such as workshops, seminars and refresher courses. Possibly if the hospital library concentrated more on acquiring audio-visual mate-

rials, its use both by those enrolled in courses and those not enrolled in courses would be measurably increased.

CHAPTER VI

SPECIFIC CLINICAL INFORMATION NEEDS OF MEDICAL DOCTORS: A PILOT STUDY

The purpose of the study undertaken in this chapter is to determine as specifically as possible the clinical information needs of physicians and to suggest the implications of such needs for a medical information network. This chapter represents an analysis of these needs as expressed in, (1) the responses to a question directed to medical doctors as part of the main questionnaire, and (2) a number of personal interviews conducted seven months later with questionnaire respondents. In analyzing the responses, it was discovered that the reasons for seeking information affected the selection of the information source. This was particularly noted in the responses to the interview questions. Since these reasons for seeking information will determine, in part, the implications of the findings for an information network, the responses given in the questionnaire and in the interviews will be analyzed separately. After a brief discussion of the questionnaire responses, this chapter will concern itself primarily with the results of the personal interviews.

Since the ultimate objective of any medical information system is to improve the quality of health care delivery, a thorough understanding of the information required to reach this objective is a necessity. One means of obtaining such an understanding is by a classification of the information needed in the clinical situation. Moreover, such a classification might be viewed as prerequisite to the creation of any information service that may be offered. Once such a classification has been established, it is hoped that medical libraries and librarians will be able to respond with better information services and programmes for current awareness and continuing education for practicing physicians.

In order to develop a scheme for classifying, the following definition of clinical information has been adopted in the context of this study: that information which is needed by the physician to diagnose and treat specific patients, which goes beyond data collected and detailed on medical records,[1] and beyond the knowledge and experience which has already been accumulated by the physician.

Questionnaire

A preliminary classification of clinical information resulted from the analysis of the questionnaires. There were 61 responses to the question "In the last two weeks what types of [clinical] information related to your work

---

[1] Much has been reported in the literature about clinical information defined in terms of medical records. The central problem is that of reducing clinical records to logical sets and subsets of the whole body of clinical information. In this context, "clinical information" refers to that data which is recorded about a patient in a medical record. This is not the definition of clinical information used in this study.

have you needed?", out of a total of 181 questionnaires (the other 120 either responded with a "nil" or left a blank). The classification scheme outlined in Table 1 was arrived at by an analysis of each response for its explicit or implicit contents, e.g. while one response was "procedures" (explicit), another was "reference regarding injection of a shoulder joint", which implies, rather than states, that it is procedural; both are classified as procedural information.

It is easy to see from the figures that the most commonly sought-after information is general information about drugs, disease, and treatment. In descending order from most sought-after to least, the categories and quantities are "Drugs" (34); "Disease" (21); "Treatment" (14); "Diagnosis" (9); and "Other" (6). While these figures are in themselves important, they tell us nothing about the conditions surrounding the application of the information being sought. This understanding is necessary if the implications of the information needs for a network are to be determined. For example, if information regarding drug dosage is needed immediately in order to save a patient's life, e.g. an injection of adrenalin for a cardiac patient, it will not help the physician or the patient if it is necessary to phone the library and wait for the answer. But drug information is rather easy to obtain quickly in a reference text. The situation becomes far more acute when the information is needed immediately and is not in a form which

TABLE 1

Classification of Information and Number of Requests in each Category

Major Class	Sub-Class	Number
Drugs		
	General	21
	Dosage	6
	Effects	6
	New Drugs	1
Diagnosis		
	General	3
	Symptom significance	1
	Lab test significance	5
Treatment		
	General	11
	Procedure	3
Disease		
	General	15
	Complications	3
	History/Prognosis	2
	Causes	1
Other		
	Biochemistry	2
	Poisons	1
	General clinical (inter-specialty)	3

Since several physicians responded with more than one information need, the total exceeds 61.

makes it readily available for consultation. A good example of this is procedural information. The surgeon who operates tomorrow has time to review the literature on the finer points of inserting a pace maker, or better yet, he can discuss it at length with an experienced colleague. But the doctor on call in a rural area who has never inserted a pace maker and must do so immediately in order to save a patient's life, does not have time to do a literature search, and he has no one knowledgeable in the field to assist him. For this country doctor, who needs the information right away, it is important that it be in an easily accessible form.

These examples should be sufficient to make us realize that it is necessary to know the conditions surrounding the application of the clinical information if one is to be able to supply adequate services. While these conditions or purposes may not be cause for changes in the presentation of information in some of the categories outlined, they may well be in other categories. For this reason, it will be helpful to look more closely at the interviews with the physicians.

Interviews

Since it was decided that interviews were necessary in order to determine the specific nature of clinical information needs, those physicians who expressed a willingness to be interviewed, by so responding on their questionnaires,

were selected to be contacted for this purpose.[2] It should be noted that of the 181 questionnaires received from medical doctors, only 36 respondents indicated an interest in being interviewed; out of these, only 13 were actually interviewed. The others were not interviewed for various reasons such as unavailability at the time of the study, retirement from practice, death, or relocation beyond the sample area. Therefore, it should be borne in mind that the results reported here are limited to a small number of doctors, and do not pretend to be representative of medical information needs in general. Furthermore, the presence in the Study Region of large teaching hospitals, the proximity of a medical school, and the presence of medical research institutions, all contribute to a certain bias in the types of responses obtained. It is hoped, however, that the results of this study will suggest some hypotheses about clinical information needs which could later be tested on a wider scale.

The sample group of physicians interviewed numbered thirteen. Eight of these were specialists; five were in general practice. Nine worked in London, three in surrounding areas in which there was at least one hospital, and one practiced in a rural area about 35 miles from the closest hospital (in London).

---

[2] Medical doctors only were selected since this is a pilot study intended to generate hypotheses, and time did not permit a study of all categories of medical personnel.

As indicated in Table 2, the physicians have been grouped into five categories according to their place of medical practice, and into four categories according to the type of activity they performed. These categories were created as a result of the data obtained from the physicians on their questionnaires and in their interviews. All of those in private practice were in family medicine, while all of those in other types of practice were specialists. This rather neat breakdown is, unfortunately, somewhat misleading. Had it been possible to have specialists in private practice included in the interview sample group, perhaps different results would have been obtained.

There are other areas of bias represented in this group as well. While the majority of physicians in private practice, regardless of location, are not engaged in teaching, three of the five in this category were actively engaged in academic medicine. The requirements of teaching medicine are such that one would be more likely to be au courant with one's field than someone not involved in teaching. In addition to this, two of the private practitioners were active on hospital staffs on a part-time basis; this, too, lends another dimension to their information needs. Only one physician was not practicing clinical medicine. He was included in this study because not only was he a questionnaire respondent, but his answers were interesting since he was involved in clinical research and had practiced clinical medicine in the past.

TABLE 2

Number of Physicians in each Category

Type of Practice	Activity			
	Clinical	Research	Lab	Teaching
Private Practice				
Full-Time	3	0	0	3
Part-Time plus Hospital staff	2	0	0	0
Full-Time Medical School staff	0	1	1	1
Full-Time University Hospital staff	1	1	1	1
Full-Time Other Hospital staff	6	5	2	4
Totals	12	7	4	9

The sample group represents 36% of the total who wished to be interviewed; it represents 7% of the total number of questionnaire respondents in the M.D. category.

The Interview Questions

In order to determine whether or not a knowledge of the reasons for obtaining information is necessary in order to classify the information being sought, four questions were asked of each interviewee:

1. What type of information have you needed recently in a specific clinical situation, and for what specific reason have you needed it?
2. How do you usually obtain this type of information?
3. How would you like to be able to obtain it?
4. What kinds of information could you not obtain in a library?

It was hoped that the answers from all questions would suggest what clinical information is, how it is sought, how it is used, and whether or not the conditions of use of the information are of fundamental importance with respect to the implications for services which may be provided.

The first question was not intended to elicit a structured response; for this reason it was not specific. A definition of clinical information was not introduced into the interview; it was expected that the interviewee would supply his own notion of clinical information - types and functions - and relate it to his own professional practice.

Questions two and three were asked primarily for the purpose of determining the implications of clinical informa-

tion needs for a medical information network. It was hoped that the responses to these two questions would reveal how doctors prefer to be informed of different types of information.

Question number four was asked to determine if there was a type of information which a library could never hope to provide, given the current state of information services. It was also anticipated that the responses to this question would suggest new ways in which information of various types could be presented.

Analysis

The responses to the interview questions were first analyzed in terms of a classification of the clinical information needs expressed. The categories of information which resulted from this analysis are almost identical to those which resulted from the analysis of the questionnaires. However, the interviews revealed three aspects of the information being sought that the questionnaire did not: 1) when the information is needed - either immediately or not; 2) why the information is needed - whether for a specific case or for current awareness, and; 3) how or where the information can easily be obtained, i.e. through a library or not. Preferred source and/or form was also indicated. It was felt that these three dimensions, when correlated to the types of information requested, would suggest implications for information services within a medical information network.

Table 3 classifies each information request according to its type, when it was needed, why it was needed, and how it could or could not be obtained. The numbers indicate the number of times each type of request for information was expressed in the interviews. With the following exceptions, the categories of information are the same as those derived from the analysis of the questionnaires: "Poisons" were not included in the interview sample; "General clinical" was broken down into "General clinical" and "Clinical outside one's area of specialization".

Table 4 gives examples of information needs in each of the categories outlined above, with the exception of the "General" categories, taken from the interviews.

Looking first at the "need immediate" category, there are five types of information which were sought where there was an immediate need only: "Drugs - General"; "Drug dosage"; "Symptom significance"; "Complications"; and "Disease - causes". Looking next at availability of information, in the case of "New drugs to use", "Diagnosis - General", "Symptom significance", "Treatment - General", "Procedure", "Complications", and "History/Prognosis", there was doubt as to whether or not this information could easily be obtained in a library, with some respondents answering in the affirmative and some in the negative. In the case of "Drug effects", "Assessment of data" (a general pulling together of all patient-related information and data), and "Clinical outside one's own area of specialization", the

TABLE 3

Classification of Information Needs from Interviews

Type of Information	When		Why		How/Where	
	Immediate Need	Need not Immediate	Specific Case	Current Awareness	Easily obtainable in library	Not easily obtainable in library
Drugs - General	3		3		3	
Drug dosage	3		3		3	
Drug effects	2	1	3			3
New drugs to use		4	3	1	2	2
Diagnosis - General	1	3	4		3	1
Symptom significance	6		6		4	2
Lab test significance	2	1	3		3	
Assessment of data	3	4	7			7
Treatment - General	4	9	9	4	10	3
Procedure	2	2	4		1	3
Disease - General		2	1	1	2	
Complications	3		3		1	2
History/Prognosis		3	3		1	2
Disease - Causes	1		1		1	
General clinical		6		6	6	
Clinical outside one's own area of specialization	2	3	5			5
Biochemistry		1	1		1	
Statistics	4	2	6		5	1

TABLE 4

Examples of Information Needs

Category	Example
Drug dosage	Amount of adrenalin for a cardiac patient
Drug effects	Are high dosages of drug x safe for a pregnant woman?
New drugs to use	Is the new drug thalydomide really effective?
Symptom significance	Significance of continually elevated serum levels in hepatitis
Lab test significance	Will test x tell us anything we don't already know?
Assessment of data	How do you interpret clinical data that defy all the rules of textbook cases?
Procedure	How do you insert a Blakemore tube?
Complications	How do you manage an obstetrics patient when there are endocrine complications?
History/Prognosis	Uterine cancer recovery when treated with cobalt
Diseases - cause	What causes hypertension?
Biochemistry	What is copper uptake of liver?
Statistics	What are the chances of rheumatic fever developing from a streptococcus infection?

responses indicated that this type of information is not easily obtainable in a library, although these types of information were not always needed immediately. Several of the physicians interviewed indicated that with respect to "Drug effects" and "Assessment of data" it is usually necessary to see the patient and have a colleague discuss the condition with him in order to assess the significance of symptoms, response to medication, and the possibility of complications. One described this assessment as "the art of medicine rather than the science of medicine". As for the "Clinical outside one's own area of specialization" category, all five of the doctors who talked about this type of need indicated that not obtaining the information in a library was largely a function of time. Although this type of information could be obtained in the library, it was felt by the physicians to be easier and faster to obtain the source of such information, or the information itself, directly from a colleague who is familiar with the literature of the field.

The current awareness category is interesting in that only information about new drugs, general treatment, disease, and clinical medicine are to be found in it. The physicians seem to indicate in their answers that if they keep up with the general developments in their fields, they are usually able to find the type of information which is highly dependent on the individual case when they need it.

General Comments by the Physicians

On information not easily obtainable in the library:

Time to conduct the search for information was the most often mentioned reason for not seeking or finding information in the library. Two physicians noted that procedural information presented peculiar problems. The necessity of having visual presentation of procedure was noted. One physician suggested that a series of pamphlets, updated a annually, describing and illustrating ("with lots of pictures") procedures like the insertion of a pace maker or a Blakemore tube would be most valuable if, for instance, one was called upon to use such a procedure in an emergency situation having never done it before.

An up-dated handbook of clinical statistics was mentioned as a possibility in order to avoid the necessity of searching through several journals (after consulting the appropriate indexes), which is costly in terms of time.

Several of the doctors noted that information on the effectiveness of new treatments or drugs is also difficult to obtain because, while the existence of the treatment or drug is made known through the literature, it is often a period of more than two years before any follow-up studies appear. In such cases, the most common practice is to ask a colleague who has used such a treatment or drug, or to contact a nearby clinic or hospital. One family physician

did just this before deciding whether or not to prescribe thalydomide, in the years before its effects on pregnant women were published. This doctor noted, with relief, that he was not convinced of its usefulness after talking with his colleagues and so did not prescribe the drug to any pregnant woman.

On information services they would like to see:

All the doctors interviewed said that they would like to be able to phone the library and ask for five or six articles on the latest developments in a certain field, and have the photocopies on their desks the next day. One called it a desire for "an instant library", which would, in addition, provide answers to quick reference questions immediately. Although most of the doctors (primarily the specialists) expressed an uncertainty about whether any librarian, except one trained in all aspects of clinical medicine, could find all of the most important articles (there was a great fear of missing something), all of the physicians nevertheless indicated by the smiles on their faces that they would indeed be receptive to such a service.

One specialist said that he considered as part of any library's normal function a provision for a "continuing search service". An example of what he would like to see is an automated search of Current Contents so that he would not have to waste too much time leafing through it himself.

The phone service approach to quick reference services and the photocopying of articles were well received by the group of doctors. One physician fancifully suggested that a phone service which would put one in touch immediately with a specialist in whatever area of specialization was desired would be very useful. The idea of having taped lectures over the phone was not so well received, for as one doctor put it, "you might spend fifteen minutes listening to everything you already know and not what you need to know; or what more often might be the case, someone on the other end will put on the wrong tape". Another noted that one could easily skim a page and determine if the information was relevant, but that is not so easily accomplished with tapes such as Audio-Digest or Medifacts.

One physician showed the interviewer a series of symptom-oriented flow charts currently being printed by Patient Care. He said that he found these extremely useful, which prompted the interviewer to ask other doctors if they would find such aids helpful. All of the family physicians and two of the specialists indicated that these would be very valuable to them. The one family physician who made use of them said that they made diagnosis easier for him, that this was significant because diagnosis is rather difficult in as many as 25% of the patients he sees.

Several physicians were unaware of the existence of certain services, e.g. MEDLARS, preparation of bibliographies

by reference librarians, etc., and were pleased to be notified of them in the interview. But in addition to the problem of informing doctors of the services presently available to them, there is the very real need of orienting them towards using the library; this need was expressed frequently. One physician suggested that the library should prepare a series of videotapes instructing the library user how to search in each subject area. While all of the doctors indicated that they could find most of the clinical information that they need in the library or through library resources, a truly effective search takes too much time, time which they do not have to spare. They felt that by learning to use the library properly the efficiency of any search could be greatly improved.

On continuing education and current awareness:

By far the most overriding concern of every doctor interviewed was the difficulty of keeping up to date in his own field and knowledgeable enough in peripheral fields. Each physician has his own way of accomplishing this, with reading the major medical journals being common to all. Some of the methods are very interesting and bear looking at individually.

Two of the specialists, who were the only consultants for their fields in the entire sample area, kept extensive files of articles and letters. The practice is a simple

one, and one of the doctors said that he felt all medical students should be trained to do this. It involves tearing out or photocopying articles relevant to one's field, but perhaps not of immediate use, and filing these under subject headings of one's own devising. These articles are then referred to when the problem-case arises. Letters from other consultants are treated in the same way. This amounts to keeping one's own personal library and is especially effective because the doctor knows what he means by each subject heading. As one of these two doctors pointed out, a keyword search on a file or index that someone else has set up inevitably leads to an oversupply of irrelevant articles.

Of course, there are only so many journals that one has the time to read or peruse. One specialist has overcome this limitation by participating in a journal club. This is a group of six physicians, all in the same area of specialization, who meet once a week and discuss interesting articles that they have read. Each reads different journals, so each is able to increase his coverage of the literature significantly by this practice. As well, not only can the colleague comment on the usefulness of the article, but he can also relate it to his own clinical experience; similarly, one can ask if the other's experience has borne out the truth of an article recently published.

All of those interviewed commented on the usefulness of refresher days and brief post-graduate courses. The biggest

complaint here was that too often these amount to a day here, or an afternoon there. All indicated that they would prefer to take three or four days in a row to participate in an up-dating course.

The one family physician who practiced in the country said that his most important post-graduate education was in the form of his contact with specialists. Since all of his patients requiring in-hospital treatment were referred to specialists in London, he had "the benefit of a specialist's opinion and method of treatment for [his] patients." For example, he had come to know from his contacts with specialists that if he uncovers a positive pap smear in a patient, he can safely tell the patient that she will need an endometriotic biopsy, and that if this test is positive, radiation treatment followed by a hysterectomy, or vice versa, will be required. His colleagues also keep him informed about new drugs and effective treatments. The effectiveness factor appears to be the more important. It is one thing to know of the existence of something and another to be assured of its value. For this reason, the contact with colleagues has definite advantages over the literature.

However, there was a counter-argument expressed by half of the sample group. While they all showed an interest in hearing their colleagues' views on the value of certain drugs and treatments, there was a fear expressed that one

physician cannot possibly have had experience or a large enough sample group on which to call in order to give an opinion which needs no qualification, and a reluctance to accept the accuracy of another's memory. For these reasons, the physicians prefer to verify the information given to them by their colleagues by going to the literature. One doctor said that he just feels more comfortable if he has read it himself. Some even prefer to go to the literature first because, as one noted, "in a library you have the advantage of calling upon the literature from five continents" and if similar studies are being conducted by three different research groups around the globe, one is more likely to find accurate information.

The greatest complaint of the family physician was that the medical periodical literature all too often concentrates on the rare or exotic in clinical medicine. His need is for information on the current treatments of common conditions.[3] This seems to indicate that current awareness centres around the relatively common conditions with which one deals about 85% of the time, and that the need for patient-specific clinical information arises when the case is unusual or rare, or when the "best" treatment varies from year to year, or when the information is of a quantitative or statistical nature which is either forgotten

---

[3] The preferred source of such information is the "review article".

easily or is highly dependent upon the individual being treated.

On libraries in general:

All of the doctors interviewed said with enthusiasm that they felt that libraries can be very useful to them and commented on the high quality of service that they receive at present. One specialist noted that "it doesn't happen very often that information cannot be gotten in the library". The only difficulty he found was that the search time was often so long that the "immediacy of the need [was] gone by the time [he got] the information".

All of the physicians interviewed were very library-oriented and eager to see an expansion of library services.

CHAPTER VII

ANALYSIS OF HOSPITAL LIBRARIES' RESOURCES AND SERVICES

Most library and information networks are developed from a basis of existing resources. It seems reasonable that the "Medinform" Survey might also follow such a pattern, as indeed was recommended by the authors of Annex E[1] and Supplement No. 4 of the Report of the Ontario Council of Health on Library and Information Services.[2] In order to ascertain the feasibility of building a network upon existing resources in the Study Region, several categories of operation in the 14 hospital libraries were defined and surveyed. It is by no means presumed that all hospital libraries will be involved in the proposed network as Primary Contact Libraries. However, it was felt necessary to attempt to measure the potentiality of each of them to serve as PCL's. The criteria and suggestions for minimum standards given in

---

[1] Report of the Ontario Council of Health on Library Services, Annex "E" (Ontario Department of Health, June, 1969).

[2] Report of the Ontario Council of Health on Library and Information Services, Supplement No. 4 (Ontario Department of Health, 1970).

an appendix to Annex E were used to measure the adequacy of selected categories of operation in the different libraries. These categories include Personnel, Objectives, Physical Facilities, Services and Collections.

No formal methodological tool was employed as such a tool was demonstrated to be superfluous by the Sidlofsky Report.[3] The Sidlofsky Report showed that certain questions could be overly sophisticated; for example, asking a medical record librarian, who devotes several hours a week to the medical collection, the question of whether the library performs citation services, such as verifying titles or compiling bibliographies, when the library is involved in neither technical services nor circulation control, is really missing the point. Hence a combined technique of direct and indirect observation with the use of informal questions, "playing it by ear", was used.

As part of the survey of the adequacy of medical collections in hospital libraries, journal subscriptions and holdings were obtained in order to produce a union list of health-care serials. This list (Appendix B) includes periodicals, irregular serials and annuals. Interviews were undertaken to determine the potential ability and readiness of the hospital libraries to share their serials collections among

---

[3] Judith Carol Sidlofsky, "A Scheme of Evaluation of Services for the System of Primary Contact Libraries Discussed in the Report of the Ontario Council of Health on Library Services, Annex E" (Research paper, School of Library and Information Science, University of Western Ontario, 1970).

themselves. The types of questions asked were whether the library records its serials holdings, whether it has a policy to hold back-runs of serials for a certain number of years, and whether it organizes the serials collection; whether it engages in exchanges with other libraries; and whether those in charge of the libraries are familiar with the tools for Interlibrary Loan; for instance, the Union List of Scientific Serials in Canadian Libraries.[4] The results will be shown and discussed in later sections.

The overall picture of the hospital libraries is that they are wanting very severely in resources and services, at least compared to standards set out in Annex E. As was mentioned, Annex E provides standards for health sciences libraries with respect to the following categories: Personnel, Objectives, Physical Facilities, Services and Collections. Assuming that these categories of library operations, although discrete in themselves, do form an integrated whole in providing library services for the users, it seems reasonable to believe a library would have to meet standards for most of the categories before it could be regarded as adequate from the point of view of providing service. The hospital libraries in the "Medinform" Survey will, therefore, be examined according to each of these categories in the sections that follow.

---

[4] Union List of Scientific Serials in Canadian Libraries (4th ed.; Ottawa: National Science Library, 1971).

Personnel

The category of personnel is considered first because whether there is any library service at all depends most upon this single factor. The catergories of personnel in charge of the hospital libraries surveyed are remarkable for their diversity. They include one half-time professional librarian, one trained library technician, four experienced library technicians, five medical record librarians/clerks, one director of nursing, and one doctor.

Only one hospital library is overseen by a professional medical librarian and she works only half-time. She is a graduate of the School of Library and Information Science, University of Western Ontario.

The only other librarian in charge of a hospital library who has had formal training is a graduate of the library technician's course at Fanshawe College of Applied Arts and Technology. She is active on her job, currently converting the library's classification from the Boston Medical Library Classification to the National Library of Medicine Classification. She is also beginning to make a subject catalogue. She is actively engaged in Interlibrary Loan with the University of Western Ontario, the University of Toronto, York University, and the Canadian Hospital Association Library.

Three of the experienced library technicians have working experience in the Health Sciences Library (formerly the Stevenson Library of the Medical School on Hill Street)

of the University of Western Ontario. They have had no formal library training, but have had non-professional experience ranging from five to eleven years. The "librarian" at Westminster Hospital, on the other hand, does not have any training or previous working experience. She has been in charge of the library for five years.

There are three medical record librarians and two medical record clerks assigned to be in charge of the medical libraries of the hospitals. Four of these are primarily hired to look after medical records. The medical record librarian at Strathroy-Middlesex General Hospital, however, spends half of her time in public relations and administration. She is the only one who has her office in the library, or rather, the library is in her office. The medical record librarian at St. Thomas-Elgin General Hospital and the medical record clerk at Tillsonburg District Memorial Hospital are new on the job, and their roles as librarians of the medical libraries are akin to that of custodians. Their offices, as well as that of the medical record clerk at Woodstock General Hospital, are in adjacent rooms; whereas, the office of the medical record librarian in charge of the medical library at St. Thomas Psychiatric Hospital is physically far removed from the library.

The directors of nursing at Four Counties General Hospital and at St. Mary's Hospital sometimes act as librarians, but no one is specifically assigned in either place to man the libraries.

The physician who is in charge of the library at Alexandra Hospital is not formally appointed. The library

is a purely personal interest of his.

According to the formula of minimum standards for personnel in different hospital libraries supplied in Annex E, support of assistants and clerk/typists is necessary in the larger hospital libraries. The actual distribution of manpower is listed in Table 1. Only one of the fourteen hospital libraries meets the minimum requirements for personnel. This library, which is the Children's Psychiatric Research Institute (C.P.R.I.), even exceeds the minimum requirements by having one half-time assistant, a clerk/typist, and three one-day-a-week volunteers. The reason for this is that, despite its small bed-size (110), C.P.R.I. is a provincial research institute.

TABLE 1

Personnel in the 14 Hospital Libraries

I. Categories of Personnel in Charge of the Libraries

A. Professional Librarians

London, London Psychiatric Hospital
Staff Reference Library
Medical Librarian, Mrs. Catherine Barr

B. Trained Library Technicians

Woodstock, Oxford Mental Health Centre
Medical Library
Medical Librarian, Miss Gayleen Brown

C. Experienced Library Technicians

London, Victoria Hospital
Stevenson Medical Library
Hospital Medical Reading Room
Medical Librarian, Mrs. Edith Logis

London, St. Joseph's Hospital
Medical Library
Director of the Library, Mrs. Bernice Rowcliffe

London, Westminster Hospital
Medical Library
Librarian, Miss Atkins

London, Children's Psychiatric Research Institute
Library
Supervisor of the Library, Mrs. Asta Hansen

D. Medical Record Librarians/Clerks

St. Thomas, St. Thomas-Elgin General Hospital
Medical Library
Medical Record Librarian, Miss Anne-Marie Talgves

St. Thomas, St. Thomas Psychiatric Hospital
Medical Library
Medical Librarian, Miss Anne McCartney

Woodstock, Woodstock General Hospital
Medical Staff Library
Medical Record Clerk, Miss Mae Osman

Tillsonburg, Tillsonburg District Memorial Hospital
Medical Library
Medical Record Clerk, Miss Anne Jennings

Strathroy, Strathroy-Middlesex General Hospital
Medical Library
Medical Record Librarian, Mrs. Margaret Blais

E. Directors of Nursing

Newbury, Four Counties General Hospital
Medical Collection
Director of Nursing, Mrs. G. Anderson

London, St. Mary's Hospital
Medical Library
Supervisor of Nursing, Sister St. Anthony

F. Physicians

Ingersoll, Alexandra Hospital
Medical Collection
Active Medical Staff and General Practitioner,
Dr. J. Lawson

II. Support Personnel in the Libraries

A. Clerk/Typists

London, St. Joseph's Hospital
Medical Library
Library Assistant, Miss Rebecca Donohue

London, Children's Psychiatric Research Institute
Library
Clerk/Typist (half-time), Mrs. Thompson

London, Victoria Hospital
Stevenson Medical Library
Hospital Medical Reading Room
Clerk/Typist, vacant

Objectives

It is stated in Appendix B of Annex E that "the health library actively supports the philosophy and day-to-day activities of the health care facility, by providing and making accessible adequate educational and informational library materials. The size and type of health care facility, and the range of disciplines represented, determine the character and direction of the service offered."[5] This category of objectives is by far the most difficult to define and tabulate, as most of the hospital libraries do not have a written statement of objectives. However, something about objectives might be inferred from answers given to the question, "who are the primary clientele of your library?". This question was asked by Sidlofsky in her questionnaire, and the answers (see Table 2) give a quite disappointing picture measured against the criteria set out in Annex E and the general philosophy of this report. Ten out of fourteen of the hospital libraries have as primary clientele medical staff and students. Among these ten hospital libraries, three also benevolently indicated "and others". As for the remaining four libraries, Four Counties Hospital has no formal designation of a medical Library; St. Thomas Psychiatric Hospital is open to all staff, but the library itself is not very useful as there is no

---

[5] Annex "E", op. cit., p. 53.

TABLE 2

Primary Clientele of the 14 Hospital Libraries

Hospitals	Primary Clientele
Four Counties	No medical library
Alexandra	The library is in the Doctors' Lounge
C.P.R.I.	Staff, students, community professionals, patients' parents
Strathroy	Medical staff and "others"
Tillsonburg	Medical staff and doctors in town
St. Mary's	Medical staff
Woodstock	Staff doctors and interns
St. Thomas-Elgin	Medical staff and students
London Psychiatric	Medical staff, students and "others"
St. Joseph's	Medical staff, students and other staff members
Oxford Mental Health Centre	Medical and nursing staff, doctors in town
Westminster	Staff residents and consultants
Victoria	Chiefs of departments, senior residents, residents, interns, and medical students
St. Thomas Psychiatric	All staff members

shelf arrangement for the severely out-of-date medical collection; Alexandra Hospital has a medical collection in the Doctors' Lounge, which implies it is for the use of doctors only; and finally, C.P.R.I., states in its library policy that the library is available and staffed to assist, 1) C.P.R.I. staff members, 2) university and college students, 3) community professionals, and 4) patients' parents on recommendation of the staff.

Physical Facilities

St. Joseph's Hospital, Medical Library

The library is located on the second floor near the end of a wing in the old building. It has a seating capacity of approximately 20. Books and bound journals are arranged on sections of shelves to the right of the doorway. Current issues of journals, and abstracts and indexes, are separately displayed at both ends of the shelves. The card catalogue is in the centre of the room.

London Psychiatric Hospital, Staff Reference Library

The hospital has scattered buildings and the library is in the main building, located in the corridor of one wing. It is a reading room with a seating capacity of about 20 and a very small lounging area. Current issues of journals are displayed at one end of the room and books are on shelves at the opposite end of the room. Bound journals are on shelves along one wall.

Westminster Hospital, Medical Library

The hospital building is a horseshoe shaped structure, and the library is located at the very tip of the building on the ground floor. Current issues of journals are kept both in enclosed book cases and on shelves.

Victoria Hospital, Stevenson Medical Library

The library is not situated in the hospital but in a separate building adjacent to the Victoria School of Nursing on Hill Street, London, one block north of the hospital. It is connected to the library of the School of Nursing by a passage-

way. It is a narrow, rectangular room divided into alcoves by shelves, with bound journals along one side and books along the other. Current issues of journals are displayed on shelves right by the passageway. The catalogue is nearby.

Victoria Hospital, Hospital Medical Reading Room

The library is situated on the ground floor near the end of the Victoria block complex. It is a very narrow room with books and journals along the four walls and a long table in the middle. At the time of the visit, the library was in the process of being physically rearranged.

Children's Psychiatric Research Institute, Library

The library is in the basement. It is a fairly large room with regular shelving for books at one end of the room and journals at the other. Current issues of journals are displayed on shelves at the far end, and back issues of the current year journals are stored in boxes along an adjacent wall. Bound journals are on the opposite wall. Indexes and abstracts are kept in enclosed book cases next to the journals.

St. Thomas-Elgin General Hospital, Medical Library

The library is centrally located next to the Medical Records Department. It must be reached through the Medical Records Department. Current issues of journals are displayed along one wall and books are kept in enclosed book cases. There are a few bound journals kept in the cupboards at the bottom of the book cases. Other than these, no back issues

are kept. The room has more lounging area than study area, and is used for film shows and conferences. It has a portable card catalogue.

St. Thomas Psychiatric Hospital, Medical Library

Although the library is normally under the authority of the Medical Records Department, it is quite far removed from the Department, and no control whatsoever is exercised. Books and journals are randomly shelved. There are no bound journals. The room is used mainly for meetings and conferences.

Oxford Mental Health Centre, Medical Library

The library is very centrally located on the ground floor. Books and bound journals are shelved along the walls, and current issues of the journals are arranged on display shelves in the centre of the room. Also in the centre of the room is the card catalogue. There is very limited study and lounging area. The library technician's work room is next to the library.

Woodstock General Hospital, Medical Staff Library

The library is a very small, narrow room next to the office of the Medical Record Clerk. Books are shelved along the long wall, with back issues of Index Medicus on shelves and back issues of journals in a cupboard below. Current issues of the journals are displayed along the shortest wall. The only table in the room is usually placed against the wall and moved into the middle of the room for various meetings.

Strathroy-Middlesex General Hospital, Medical Library

The medical library is located at the doctors' entrance to the hospital, across from the Medical Records Department.

The library consists of one wall of a room. The room serves also as the office of the librarian/PR-administrative assistant. The bulk of the library's collection is scattered among the various departments.

Four Counties General Hospital, Medical Collection

The medical collection consists of one section of shelves in a multi-purpose room designated as a Consultation Room.

Alexandra Hospital, Medical Collection

The medical collection is in the Doctors' Lounge. Books are on shelves against one wall, while loose journals are displayed along an adjacent wall.

Tillsonburg District Memorial Hospital, Medical Collection

The medical collection consists of two sections of shelves in the filing room for medical records opposite the doctors' mail boxes.

St. Mary's Hospital, Medical/Patients' Library

The medical collection consists of one section of shelves in the Medical/Patients' library, which is on the ground floor to the left of the main entrance.

Services

The services which a library provides are largely dependent upon its collection, its physical facilities and its personnel. From what has been so far discussed, it will be fairly obvious that most of the libraries in the study region are not in a position to provide any but the most basic services. Indeed, many services that are usually considered essential in libraries cannot be provided in most of these fourteen hospitals. The questions relating to services focused on factors felt to be of basic importance in considering a medical information network, viz., on Interlibrary Loan and on a union list of holdings of health care periodicals for the hospital libraries of this region.

The seventh and eighth questions of the interview discussed in the "Collection" section asked: "Do you borrow from or lend to other libraries?" and "If so, how often?" Only eight libraries, five in London and three in the country, had participated in Interlibrary Loan. The personnel in charge of five of these seven libraries stated that they had borrowed quite frequently from the Canadian Hospital Association Library, the University of Toronto, York University, and the National Science Library. At a later date, what was available in the way of Interlibrary Loan records for xeroxed articles at the Health Sciences Library at the U.W.O. for the months January-October of 1972 were examined. Unfortunately, the library does not keep records

of interlibrary loan requests from hospital libraries in the London area, since these are teaching hospitals affiliated with the University Clinical Program, and requests for materials are simply handled by the circulation desk as ordinary loans. However, the investigation revealed some interesting facts. The record showed only three of the eight "country" hospitals had borrowed from the Health Sciences Library at U.W.O. The requests from one hospital, Woodstock General Hospital, had all come directly from individuals in the hospital rather than through the medical library. To a certain extent the same held true for the Strathroy-Middlesex General Hospital. Half of the requests from this hospital were signed by libraries and half by individuals. The question of why the libraries were bypassed suggests itself. The apparently obvious answer that library service is not effective remains, however, to be proven. The third hospital, Oxford Mental Health Centre, among other requests, had only one request from an individual. More recent records showed that this had not recurred, possibly because of the subsequent appointment of a full-time library technician who could mediate interlibrary loan requests.

Question nine asked which libraries used the Union List of Scientific Serials in Canadian Libraries and its supplement, Canadian Locations of Journals Indexed in Index Medicus. This question was intended to determine the amount of actual and potential use of a union list. Only two libraries have the 1969 edition of both publications and one has the most recent 1971 edition. One other library has only the supple-

ment. None of the non-subscribing libraries indicated interest in subscribing.

In response to the tenth question on what would be a convenient format for a union list of serials, three persons indicated that the minimum elements should be the volumes and years of the journal holdings as well as the locations; the librarian at C.P.R.I., who had obviouslv used the Union List, suggested that the addresses of the participating libraries also be included. There was no comment from ten of the persons in charge of the libraries.

As regards the arrangement of the proposed union list of medical serials in the hospital libraries, question eleven, the majority of personnel in charge of the libraries (10) preferred an alphabetical listing by title. While four library personnel advocated annual up-dating of the proposed union list, three said that they would be satisfied with up-dating intervals of one to five years. Assurance of cooperation in maintaining a union list was obtained from only five of the libraries (question twelve). Interestingly, none of the personnel in charge of the libraries which had decentralized serials collections felt the physical locations of these journals need be indicated in the proposed union list.

Some other basic aspects of library service were investigated during the interview. It is interesting that all the hospital libraries are open from 9:00 a.m. until 5:00 p.m. (except London Psychiatric Hospital, which is onlv

open in the mornings), because the results of the questionnaires show a very clear preference among health care workers for evening, and to a lesser extent, afternoon, hours of opening.

Eleven of the libraries have access to photocopying facilities. Eight of these stated that there is no charge whatsoever for photocopying, and three said that charges are sent to the department to which the individual staff belongs.

Table 3 shows that only about two-thirds of the libraries perform one of the most basic of services, that of classification and cataloguing. Those that do not are St. Thomas Psychiatric, Woodstock General, Strathroy-Middlesex, Alexandra, and Four Counties.

About half of the libraries have Index Medicus and other tools with which they could provide indexing and abstracting services. Those that would not be capable of providing these services include St. Mary's Hospital Library in the city, and all of the county libraries except Oxford Mental Health Centre. It is more difficult to judge which libraries provide citation and reference services, but an inference might be made based upon each library's personnel and its collection. The libraries which are in the best position to give these services are St. Joseph's, London Psychiatric, C.P.R.I., and then possibly Victoria and Oxford Mental Health Centre.

TABLE 3

Description of Libraries' Classification Schemes and Catalogs

HOSPITAL	TYPE OF CATALOG	CLASSIFICATION SCHEME
St. Joseph's	Card-Dictionary-Author/Title/Subject Reprints-Medlars Search Records	N.L.M.
London Psychiatric	No up-to-date main catalogue New one in progress	N.L.M. as of 1971
Westminster	Card-Dictionary-Author/Title/Subject (One in office by author only)	D.D.C.
Victoria	Card-Dictionary-Author/Title/Subject	L.C. & N.L.M.
C.P.R.I.	Card-Dictionary-Author/Title/Subject	L.C.
St. Thomas-Elgin	Card-Dictionary-Author/Title	D.D.C.
St. Thomas Psychiatric	Card-Dictionary-Author/Title Not up-to-date	None (Psych. Dept. arranged by author)
Oxford Mental Health Centre	Card-Dictionary-Author/Title In process of doing subject headings	Boston - N.L.M.
Woodstock General	Only a list of books in a folder Separate list each year	None
Strathroy-Middlesex	Book list on cards by subject, with locations	None
Four Counties	Only lists of annual acquisitions	Broad subject area
Alexandra	None	None
Tillsonburg	Card-Dictionary-Author/Subject	N.L.M.

Collections

Personnel in the fourteen hospital libraries were interviewed in order to obtain information about the collections of books and journals available and about the services provided by each library. Information about library services will be dealt with in the next section.

Question one asked, "Do you have a list of journals to which your library subscribes?" and question two asked, "Do you also have a record of back issues which you keep in your library?" It was found that only two libraries have a list of journal subscriptions with holdings; three have a list of journal subscriptions plus holdings on Kardex or "Library has" cards; three others have only "Library has" cards; two have only a list of journal subscriptions; and four have neither.

The number of monographs and of serials in each hospital library is shown in Table 4. These figures of actual holdings are compared with the minimum standards described in Annex "E" in Tables 5 and 6. Although some of the hospital libraries have met and exceeded the minimum standards, most of them fall well below.

The number of monographs and serials in the libraries should not be considered independently from the methods used to organize them. The third question asked, "How are the journals arranged?" The results show that ten collections are predominantly unorganized, while only four are arranged in alphabetical order by title. Table 3 shows the type

TABLE 4

Number of Monographs and Journals in Hospital Libraries

Hospitals	Monographs	Current Periodical Subscriptions
St. Thomas-Elgin	115	16
Woodstock General	150	13
Oxford Mental Health	1,160	42
Strathroy	275	37
St. Joseph's	1,214	235
Victoria	1,045	175
(Stevenson)	(800)	(128)
(Medical Reading Room)	(245)	(108)
Westminster	510	98
London Psychiatric	1,500	88
C.P.R.I.	1,400	155
Tillsonburg	60	8
Alexandra	42	8
Four Counties	70	9
St. Thomas Psychiatric	316	58
St. Mary's	100	22

Bound journals which the libraries keep, but which are no longer subscribed to, are not included.

These figures include journal titles which are in the departmental collections of decentralized libraries.

TABLE 5

Projected Minimum Number of Books* and the Actual Number of Books Found in the 14 Hospital Library Collections

Hospitals by bed-size ranges	Hospitals	Number of basic books needed	Approx. number of books in the collection	Net number of books needed
Hospitals with up to 300 beds	Four Counties	300	70	230
	Alexandra	300	42	258
	C.P.R.I.	300	1,400	-1,100
	Strathroy	300	275	25
	Tillsonburg	300	60	240
	St. Mary's	300	100	200
	Woodstock Gen.	300	150	150
Hospitals with 301 to 600 beds	St. Thomas-Elgin	500	115	385
	London Psychiatric	500	1,500	-1,000
Hospitals with over 601 beds	St. Joseph's	600	1,214	-614
	Oxford Mental H.C.	600	1,160	-560
	Westminster	600	510	90
	Victoria	600	1,045	-445
	St. Thomas Psych.	600	316	284

* Based on the U.S. Veterans Adminstration's Planning Criteria for Medical Facilities and by an article by W.D. Postell, supplied in Appendix B to Annex E.

TABLE 6

Projected Minimum Number of Journal Titles* and the Actual Number of Journal Titles Found in the 14 Hospital Library Collections

Hospitals by bed-size ranges	Hosptials	Number of journal titles needed	Number of journal titles in the collection	Net number of journal titles needed
Hospitals with up to 300 beds	Four Counties	35	9	21
	Alexandra	35	8	27
	C.P.R.I.	35	155	-120
	Strathroy	35	37	-2
	Tillsonburg	35	8	27
	St. Mary's	35	22	13
	Woodstock Gen.	35	13	22
Hospitals with 501-600 beds	St. Thomas-Elgin	75	16	59
	London Psychiatric	75	88	-13
Hospitals with 600 beds	St. Joseph's	125	235	-110
	Oxford Mental H.C.	125	42	83
	Westminster	125	98	27
	Victoria	125	175	-50
	St. Thomas Psych.	125	58	67

*Based on the U.S. Veterans Adminstration's Planning Criteria for Medical Facilities and by an article by W.D. Postell, supplied in Appendix B to Annex E.

of catalogue used (if any), as well as the classification scheme. Four of the libraries use no classification system at all, and two more merely group the books according to broad subject areas.

The fourth question asked, "Are there any scattered collections located outside of the library but still under control of the library?" The collections ranged from greatly decentralized to greatly centralized. The collections at St. Thomas Psychiatric Hospital, St. Joseph's Hospital, and Strathroy-Middlesex General Hospital are decentralized, and are more thoroughly discussed later. At St. Thomas Psychiatric Hospital, the departmental serials are ordered by the Medical Record Librarian who, however, does not service the collections, whereas the personnel in charge of the other two libraries do. The remaining eleven hospital libraries all have centralized collections of some sort.

The fifth and sixth questions asked, "Are any of your journals donated?" and "Can you tell which ones are donated?" These questions again relate to the library's organization and control over its source of supply. For six of the fourteen libraries it was indicated that some journals in the libraries were donated. However, only the personnel in charge of the libraries at St. Joseph's Hospital, C.P.R.I. and Alexandra Hospital could indicate specific titles that were donated.

C.P.R.I. seems to be the only hospital which keeps the research publications of its staff in the library. These

are not catalogued and included with the monograph collection, but are kept separately, and are recorded in a list arranged alphabetically by author.

Only three of the libraries included a significant number of reprints and pamphlets in their collections: Victoria, St. Joseph's and C.P.R.I. None of the libraries in the survey have extensive collections of non-print materials; most have nothing at all. However, two county hospital libraries (Strathroy-Middlesex and St. Thomas-Elgin) and one city library (St. Joseph's) have Audio-Digest tapes. In addition, St. Thomas-Elgin's library has the use of few film projectors and St. Joseph's has some slides.

In addition to the libraries' collections, there are in the hospitals surveyed small collections of books and journals in an office or a doctors' lounge which are accessible to at least departmental staff. The size of these collections vary, ranging from 10 books to 160 books (approximate), and the number of journals from 5 to 39, most of which are relevant to the particular department. Most of these departmental collections are mixture of permanent loans from the medical libraries and personal collections. A small number of the departmental collections, however, have separate rooms, usually manned by a secretary. They also have a separate budget, with restricted lending policies. Some of these, as in Victoria Hospital, are superior to the medical library, in physical lay-out, decor, and quality of

the collections. A brief description of the departmental libraries is given in the following.

St. Joseph's Hospital

Four departmental collections at St. Joseph's Hospital in the subject areas of Pathology (50 books), Bacteriology (100 books), Biochemistry (160 books), and Radiology (100 books) are located in offices. Library materials are mixed with personal collections. The books are on permanent loan from the medical library and are catalogued. Book spines are not marked but title pages are stamped. Only the Biochemistry Laboratory has current issues of journals (6) from the medical library.

St. Thomas Psychiatric Hospital

There is a departmental collection in Psychology in St. Thomas Psychiatric Hospital. Twenty-seven journals are currently subscribed to and there are 366 books on the shelves. The journals are randomly displayed, while the books are arranged alphabetically by author. Loose issues of the current year's journals are stored in green boxes and back issues are piled up compactly on shelves. A secretary looks after the collection.

Alexandra Hospital

Insignificant in terms of size are four departmental collections at Alexandra Hospital. These are located in the Nursing Director's office (20 books), the Bacteriology Laboratory (40 books), the Physiotherapy and Occupational Therapy Department (10 books), and the Maternity Nursing Station (12 books).

Tillsonburg District Memorial Hospital

In the office of the Director of In-Service Training are 104 books, all on nursing, accumulated at the time when the hospital had a school of R.N.A.'s. Ten journals are displayed; back issues are not kept.

Victoria Hospital

At Victoria Hospital, the Cancer Clinic, the Department of Clinical Neurological Sciences, and the Anaesthesia Department all have separate libraries because they all have special grants for library facilities. Cancer Clinic has 600 books and 39 journals. The Department of Clinical Neurological Sciences has 740 books and 31 journals. The Anaesthesia Department has 120 books and 12 journals. A fourth departmental collection, Physiotherapy, has 60 books and 5 journals. The first two collections are very specialized research collections and are restricted to staff members. The Anaesthesia collection is inferior, perhaps because the financing for it is provided by the university and not by research grants. The Physiotherapy collection is an example of a paramedical departmental collection and is similar to the departmental collection in the country hospitals. The only difference is that there are more people in and around the room, since the Physiotherapy students from U.W.O. do their clinical exercises there.

Departmental collections also exist in the Physiotherapy Department at London Psychiatric Hospital and in the Department of Obstetrics and Gynaecology at St. Thomas-Elgin General Hospital. St. Thomas Psychiatric Hospital has collections consisting mostly of journals in the following departments: Nursing, Pharmacy, Laboratory, Occupational Therapy, Social Service, Dental Department and the Business Office. Strathroy-Middlesex General Hospital has small book collections on permanent loan from the medical library in the following departments: Surgery, Physiotherapy, Pharmacy, Obstetrics and Gynaecology, Laboratory, Radiology, Operating Room, Nursing, Dietary Department, Paediatrics, Maintenance, Housekeeping, Administration, Emergency, Medical Records, and Medical Ward.

APPENDIX A

DESCRIPTION OF HEALTH PROFESSIONS

The following gives a description of the professions which were included in the three surveys. Each profession is discussed in terms of the degree of autonomy with which it operates, the kinds of works it performs, its relationship with other professions, the type of education which it entails, the influence which professional organizations have on it, and the possibilities for further education open to it.

PARAMEDICAL HEALTH WORKERS IN HOSPITALS

The health workers in hospitals who responded to the questionnaires[1] are arranged in the categories below.

Therapists
- Audiologist
- Speech Therapists
- Physiotherapists
- Occupational Therapists

Social Workers
- Play Therapists
- Vocational Rehabilitation Counsellors
- Medical Social Workers

Nurses
- R.N.'s
- R.N.'s with Degrees
- R.N.'s with Diplomas
- Public Health Nurses

R.N.A.'s, Orderlies, Aides

Technicians
- E.C.G. Technicians
- E.E.G. Technicians

---

[1] Audiologists, Speech Therapists and Radiographers have not been included in the following descriptions.

Inhalation Technicians/Therapists
Medical Electronics Technicians
Medical Lab. Technologists
Nuclear Medicine Technologists
Radiographers
Radiological Technicians
Medical Photographers

Medical Record Personnel
Medical Record Librarians
Medical Record Technicians

Dietitians

Hospital Administrators
Hospital Administrative Officers

Miscellaneous
Clinical Psychologists
Psychometrists
Biologists

Oswald Hall, in a study commissioned by the Committee on the Healing Arts, gives three definitions, decreasing in scope, of the paramedical professions:

1. all the occupations that have grown up around the 'healing' practitioners, ... they include all people who offer help to the ill, including even the quacks and charlatans

2. those helping occupations that are part of the accepted framework of scientific medicine. ... In this context the paramedicals represent only the occupations that have arisen around the established medical profession in modern society.

3. Those occupations which are practised mainly within the hospital setting.[2]

---

[2]Oswald Hall, The Paramedical Occupations in Ontario (Toronto: Queen's Printer, 1970), p. 1.

Hall's study is focused on a number of specific professions and is based on the third and narrowest definition of paramedical occupations:

> The people who follow these occupations work almost entirely in the hospital setting. In a very real sense the hospital generated them; now they are essential to its operation and survival. Most of modern medicine is possible only in the hospital situation. The emergence of highly skilled expert medical specialists has been paralleled by the vast proliferation of technical equipment which is central to the modern hospital.[3]

In discussing paramedical departments in hospitals Hall discerns:

> three differentiated kinds of activities ... The most numberous group ... is the technicians who man the laboratories and other diagnostic facilities ... Next ... are various kinds of therapists, who provide for patients certain services which lie on the margin of those provided by doctors. The third group provides clerical services, handling those hospital records which are distinctively medical in character.[4]

However, he goes on to admit that the lines of demarcation are often blurred. In discussing medical departments in hospitals, Hall writes:

> A medical department is readily distinguished from the non-medical sections of the hospital in terms of its organizational form. Its members tend to view themselves as individualists, each going his own way to do what is

---

[3] Ibid., p. 2.

[4] Ibid., p. 10.

> required for his patients. Each sees himself as autonomous, and not subordinate to the commands and orders of another.[5]

In contrast, he says of the paramedical departments that although they are fairly autonomous and not supervised directly by the administrative staff, as are the clerical occupations, they do not have the complete independence that the doctors have.[6]

This question of autonomy is perhaps the key factor in the activities of paramedical personnel. Their function is to carry out the instructions of a medical man, and their actions are subject to his supervision. To this extent they lack true autonomy, although it must be recognized that within this general restraint there exist wide variations in the degree of personal responsibility enjoyed by individual professions. In some cases the doctor will minutely specify the actions to be taken by the paramedical; in others, these actions may be specified in general terms but resolve themselves into a number of very routine procedures; others, however, appear to be free to exercise their own discretion within the limits of highly generalized instructions which perhaps comprise no more than a statement of the patient's condition. Possibly greater freedom of operation accompanies a higher level of education and professional preparation.

---

[5] Loc. cit.

[6] Ibid., p. 11.

Therapists

Hall discusses the relatively new field of "rehabilitation medicine", whose practitioners include physiotherapists, occupational therapists, speech therapists, audiologists and rehabilitation nurses.

> The therapist treats a physical problem in a physical sense, rather than surgically or chemically. The various techniques used by a physiotherapist - for example, exercises, hydrotherapy, electrotherapy - are simply different ways of treating an injury. Basically the therapist deals with movement, with the exercise, patterning and restoration of function of the muscles and limbs of patients who are on the mend after an accident or operation. [7]

The aim of the occupational therapist is restoration of function, partly social and partly physical.

> They attempt either to teach a patient how to accept his disability or to take him by stages to the point where he can carry out the tasks he did before his injury or operation. By doing something functional, the patient's attention is diverted while the therapist is achieving the strengthening and conditioning desired. [8]

The speech therapist deals with patients with disorders of the voice, speech, or language formation caused by organic, neurological, or physiological disturbances. Rehabilitation nursing is a very new profession and is still evolving.

Physiotherapists

The work of the physiotherapist is affected through

---

[7] Ibid., p. 104.

[8] Ibid., p. 105.

various kinds of treatments - exercises, hydrotherapy (exercise in heated baths), electrotherapy (the use of electricity for muscle stimulation or for heating of tissues), breathing exercises, and proprioreceptive neuromuscular facilitation (the re-creation of reflex patterns of "instructive" movements such as standing, walking, eating, in persons with brain damage). The treatment is requisitioned by the patient's doctor, but often it is specified in the most general terms and it is the physiotherapist who decides the precise nature and duration of the treatment actually given. In some of the largest hospitals the physiotherapy department may be under the direction of a physiatrist (a doctor specializing in physical medicine), in which case supervision will probably be much closer. Otherwise, the physiotherapist appears to enjoy a high degree of freedom for the exercise of judgment and initiative. There are several reasons underlying this. The physiotherapists are mostly university-trained, although not necessarily graduates. They consider themselves as "professionals", i.e. regulated by a code of ethics. Treatment tends to be specific in the sense that it is geared to each patient, and much of it is carried out at the patient's bedside rather than solely in special departments. Hence a hospital physiotherapist enjoys a high degree of freedom of movement and the freedom to function as an individual practitioner. The results of her work can, moreover, be seen in the individual patient's progress. An important factor is that physiotherapists are legally required to

register under the Drugless Practitioner's Act.

Candidates for a career in physiotherapy require good Grade 13 standing, with mathematics and science. They can take either a three-year diploma course or a four-year course for a degree. An internship in a hospital is also required for registration with the Canadian Physiotherapy Association, which is legally compulsory. The University of Toronto offers a combined course in both physiotherapy and occupational therapy. Advanced courses are available to practitioners of three years' standing to prepare them for teaching and supervisory functions. There are also courses on special aspects such as amputation or proprioceptive neuromuscular function, although these usually have to be taken at the therapist's own expense and in her own time, and do not necessarily bring a higher salary or promotion. They may, however, increase her ability to move to another hospital. Informal training is given in some hospitals, and Association meetings also provide an opportunity for updating information.

According to Hall, physiotherapists tend to be young and female.[9] Part of the reason for this is that salaries do not offer sufficient incentive to men, because they are lower than for most other positions requiring a university education. Working conditions are generally good, as well

---

[9] Ibid., p.112.

as job opportunities, although the prospects for promotion are limited and tend to be the reward of long service rather than ability.[10] There is some indifference towards the professional association, to which all physiotherapists must belong, and meetings are poorly attended.[11]

Occupational Therapists

The broad objective of the occupational therapist is the physical and mental recovery of the patient. However, two specific areas of her activity are of special importance: one is to enable the handicapped (e.g. paraplegics or amputees) to become independent and self-reliant in their daily life; the other is the relief of emotional stress and the stimulation of new interests and social adjustment in psychiatric patients. In long-stay hospitals such as tuberculosis sanatoria, a large part of the work may be directed towards giving patients "something to do with their hands", without any more directly purposive aim connected with treatment. Occupational therapy in psychiatric institutions seem to have become something of a specialty, and the therapist has the opportunity of assisting in the diagnostic process by observing and reporting the patient's behaviour patterns or motor abilities. Treatment here can also be of direct therapeutic value because the therapist

---

[10] Ibid., p. 114.

[11] Ibid., p. 115.

encourages the patients to work with other people, and in addition, provides them with a means of expressing themselves.[12]

The educational and training requirements are very similar to those of physiotherapists. A two-year postgraduate course is also available for occupational therapists with three years' practical experience to qualify them for a post in teaching or as heads of departments.

The remarks about the professional autonomy of physiotherapists also apply to the occupational therapists.

Social Workers

It would be something of an understatement to say that this is an area beset by problems of definition of scope of the various kinds of practitioners, and of the relationships between them and the other professionals with whom they work. Recognizing this, the Committee on the Healing Arts commissioned two studies which cover the general, medical, and psychiatric aspects of social work and which deal extensively with these problems.[13,14]

---

[12] Ibid., p. 106.

[13] Michael Landauer, Social Work in Ontario (Toronto, 1970).

[14] C. Hanly, Mental Health in Ontario (Toronto: Queen's Printer, 1970).

One of the definitions of social work quoted by Landauer reads:

> the system of organized activities carried on by a person with particular knowledge, competence and values, designed to help individuals, groups or communities towards a mutual adjustment between themselves and their social environment.[15]

Its implication for health care stems from recognition of the fact that:

> The social and psychological, as well as the physical characteristics of the total environment, in large part affect the disease patterns of the community. ... The practitioner tries to evaluate the health of the individual, not only in terms of symptoms, but by taking into account the physical, biological and social forces which impinge upon the sick person and which may affect the course of his complaint ... Modern medicine is increasingly associating mental and psychological disturbances with the emotional tension created by the points of social stress inherent in a rapidly changing and increasingly complex society.[16]

Hand in hand with this approach have gone the positive concept of health (defined by the World Health Organization

---

[15] Charles Hendry, Social Work Needs People Who Care (University of Toronto School of Social Work, 1965), p. 2, as quoted in M. Landauer, op. cit., p. 1.

[16] Report of the Royal Commission on Health Services (Ottawa: Queen's Printer, 1964), I, 98, as quoted in M. Landauer, p. 23.

as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"[17]), and an enhanced appreciation of the interest of the community in minimizing the impact of disease on individuals. These have led to community health programmes and the introduction of comprehensive schemes for medical care and welfare. It is in this peripheral area where medicine and the social sciences meet and interpenetrate, and which receives little, if any, attention in the training of the medical practitioner, that the social worker finds scope for the application of his special competencies. However, just what these competencies are, and how they should be applied, give rise to conflicting views between physicians and social workers. Many doctors appear to view the social worker's role as being little more than that of a clerk who will arrange for his patients to receive welfare assistance or improved housing conditions, whereas the social workers tend to reject this as their responsibility. Thus a serious source of disagreement is:

> the aspiration of many of these highly qualified social workers for an independent final judgement in the practice of social therapy. Many ... insist that social work in health settings should not be considered a paramedical profession ... They maintain that while the nurse or therapist cannot demand an independent final judgement in her field of practice, the social worker

---

[17]Landauer, op. cit., p. 22.

> must insist on it in his field. ... The graduate social worker often views his function as that of a skilled therapist concerned more with the intra-psychic and interpersonal aspects of the social problems of medical patients than with the financial and material aspects of the social problem.[18]

The situation is further complicated by the problems of demarcation which arise between graduates and other social workers:

> ... many graduate social workers recommend establishing limits on the range of tasks and degree of responsibility allowed to graduates of vocational and college social welfare programs. ... the crucial question is whether those who claim professional training have academic competency that distinguishes them from the vocational or non-professional. There is significant evidence that even for social workers with the M.S.W. degree this distinction is not a simple or unambiguous one.[19]

Oswald Hall states that in developing suitable training programmes, "a large part of the difficulty seems to arise from the fact that social work is currently evolving into several distinct occupations, each massive enough to occupy the full lifetime of a person".[20] Furthermore, there is an argument between different parts of the profession over the generalist and the specialist:

---

[18] Ibid., p. 32-3.

[19] Ibid., p. 20.

[20] Oswald Hall, Manpower Needs in the Field of Social Welfare (Ottawa, 1967), p. 20, as quoted in Landauer, op. cit., p. 18.

> The formal position of the ... profession is that social work in whatever setting it is practised is basically generic - that is, the elements of practice common to all settings are far more significant than the elements particular to any one setting.
>
> A significant minority, however, ... practising in the medical and psychiatric settings, consider their work sufficiently different from social work practised in any other setting to warrant specialized education and registration as medical or psychiatric social workers.[21]

Landauer also refers to suggestions that other professions may participate in social work activities. Examples of these others are family physicians, public health or psychiatric nurses trained in casework methods, or people with an education in the liberal arts who are trained to perform simple social work services. He stresses the need for research and experiments:

> to define casework, to distinguish levels of complexity and criticality in casework, to assess the possibilities of specialization for social workers by level of responsibility and by setting, and to define programs of education and training appropriate to different job categories. ... results should not be anticipated by an early and arbitrary restriction of certain functions to social workers with specific types of education.[22]

The composition of the membership of the medical social work section of the Ontario Hospital Association[23]

---

[21] Landauer, op. cit., p. 27.

[22] Ibid., p. 40.

[23] Ibid., p. 49.

was found to be as follows:

M.S.W.	29%	
B.S.W.	8%	Qualified 43%
Diploma or Certificate in Social Work	6%	
Nursing degree	21%	
B.A. or high school diploma	35%	Unqualified 56%

Part of the explanation for this imbalance may be attributed to the admission of some members without formal training in social work under a "grandfather clause" in 1964. In some hospitals which do not have a social service department, the work is done by nurses.

These extracts will have indicated some of the problems deriving from the lack of precision in the role and function of social workers in the health field. In a general comment, the Committee on the Healing Arts observes:

> In no area is [a study of the roles of health care workers] more difficult or more necessary than in the case of disciplines which are concerned in part with the state of mind of the patient, whether in mental or in physical ill health, and we urge that priority be given to role evaluation studies of such disciplines ... In the case of social workers, these problems are already serious; and they appear likely to become steadily worse ...[24]

Medical Social Workers

A basic curriculum drawn up by the Council of Social Work Education embraces the following elements: a study of individual human growth and the social environment;

---

[24] Report of the Committee on the Healing Arts (Toronto: Queen's Printer, 1970), II, 324.

social policy and services; methodology (casework, group work, and community organization, with the addition later on of administration and research); and field work.

The M.S.W. course is two years following a first degree, preferably in social sciences. At the Bachelor's level, students study for three academic years plus three 12-week summer courses, and receive a general B.A. degree plus a diploma of Social Work. Ryerson Polytechnical Institute offers a two-year course for the Social Service Certificate. A programme is available at the University of Toronto for "unqualified" social workers of proven ability, which parallels the M.S.W. course, though it does not confer the degree. Various continuing education and extension courses are also arranged by universities and by the Ontario Association of Professional Social Workers.[25]

There is no system of registration or licensing for social workers, or mandatory membership of a professional association; however, both the Canadian Association of Social Workers and the Ontario Association of Professional Social Workers require prospective members to meet certain professional educational requirements.

Vocational Rehabilitation Counsellors[26]

The concept of rehabilitation, originally concerned solely with helping the physically disabled, has been

---

[25]Landauer, op. cit., p. 18 ff.

[26]Health Careers (Don Mills, Ontario: Ontario Hospital Association, 1971), pp. 22-3.

enlarged in various ways. It has extended its scope to embrace, on one hand, the patient's mental, social and economic rehabilitation, and on the other, to include the emotionally disturbed as well as the physically handicapped.

The rehabilitation counsellor helps the patient to overcome fears that his capacity for productive employment has not completely disappeared. He advises the patient and assists him to find a work situation suitable to his needs and abilities. He also assists the patient to develop self-confidence and independence in the home situation. The counsellor usually has a university education with emphasis in the areas of psychology and sociology, and will often have worked in industry, commerce or a public service agency. Part of his task is to keep abreast of developments relevant to his work in both industrial and educational areas. For those already employed in this field, some colleges offer evening courses for certification.

Play Therapists[27]

In recent times it has been recognized that a recreation leader can make a therapeutic contribution to the recovery of patients by adapting recreational activities to meet their specific physical, emotional

---

[27] Ibid., p. 6.

and social needs. The objective of therapeutic recreaction is to promote the growth and development of the individual by providing an opportunity for patients to engage in activities which will enhance their feeling of well-being. All patients benefit from the opportunity to participate in group activities such as games, sports, and dramatics. Recreation gives them an opportunity to constructively release energy and anxiety, as well as to develop social skills and awareness. This is particularly important in connection with psychiatric patients and children. For patients with a physical disability, therapeutic recreation can help to improve motor aptitude and performance.

The responsibility of the therapeutic specialist is to conduct recreational programmes, teach skills, and help develop the attitudes which will enable the patient to be a participant in social activities. He requires appropriate qualities of leadership, imagination, and resourcefulness. Training for the profession is available in two-year diploma programmes at community colleges, or four-year degree programmes at certain universities.

Nurses

> [These] health workers ... constitute the largest and most diverse group of employees in the health industry. [It is] difficult

> ... to generalize about them. The various categories of 'nurses' range from the untrained ward aides ... through the diploma-school prepared registered nurses, to university educated specialists ...
>
> The 'practice' of nursing with which these diverse workers are engaged has never been unambiguously defined. Even the more restricted 'professional' practice of nursing seems to be defined more by the formal limitations on entry to it than by any clear understanding of the duties and responsibilities it entails. Consequently, no one today can say with certainty that '<u>this</u> is nursing, <u>that</u> is not'.
>
> ... in general terms 'nursing' has been moving steadily away from being a charitable, service-oriented 'vocation' towards becoming a 'professional' career ... requiring more and more formal education, 'registration' of formally qualified practitioners, and a large measure of self-control by the profession over the education and discipline of members. But [it] has differed in several important ways from other occupations whose members have sought ... professional status. In their work, nurses have remained subservient to another professional group - the physicians.[28]

These remarks summarize the difficulties encountered by the Committee on the Healing Arts when it turned its attention to this sector of the health professions. To assist it in its work, it commissioned a special study on this area.[29]

---

[28] <u>Report of the Committee on the Healing Arts</u>, <u>op. cit.</u>, II, 211-12.

[29] V.V. Murray, <u>Nursing in Ontario</u> (Toronto: Queen's Printer, 1970).

In dealing with the problem of drawing boundary lines around the work done by different categories of nurses, Murray considers that it is possible to distinguish three classifications of nurses according to the nature of patients' nursing needs:

> 1) Simple physical and psychological care for patients who are not seriously ill (the R.N.A. level)
>
> 2) More complex physical and psychological care and simple physician-assisting cure activities for patients who are moderately ill (the basic diploma R.N. level).
>
> 3) Complex physical and psychological care and relatively complex physician-assisting cure activities for critically ill patients; plus performance of complex, specialized functions such as administration, teaching and public health nursing (R.N. level with post-basic preparation).[30]

Although it must be emphasized that this is merely a proposed classification, it does represent an experienced outside observer's analysis of the functions performed by different categories of nursing personnel. The classification omits one category altogether, viz., orderlies and aides whose "role as nurses is very poorly defined".[31]

Murray assumes that "the essence of nursing is the direct application of skill, knowledge and judgement to

---

[30] Ibid., pp. 202-3.

[31] Ibid., p. 49.

the provision of physical and psychological comfort for the sick; aiding the physician in effecting a cure; and aiding the patient in re-establishing and maintaining his own health.[32] This may be compared with the statement of the Saskatchewan Ad Hoc Committee on Nursing Education that "the prime concern of nurses is the provision of patient care, the knowledgeable provision of comfort measures, predictably directed at reducing to manageable proportions the psychological and physical stress of discomfort, a function which is not the prime concern of others on the health team."[33]

The fields of employment for registered nurses in Ontario in 1967[34] were as follows:

Hospitals	82.9%
Nursing Schools	0.9
Private Practice	7.0
School Health	1.1
Public Health (excluding School Health)	2.8
Occupational Health	1.2
Office (e.g. physicians or dentists)	3.5
Other Specified Fields	0.1

---

[32] Loc. cit.

[33] Report of the Committee on the Healing Arts, op. cit., II, 157.

[34] Ibid., p. 166.

The general characteristics of nursing practice have been outlined above. However, they may be analyzed further, and Murray proposed the following scheme:

1. Direct care activities
   (a) physical
   (b) psychological
2. Direct cure activities
3. Adjunct activities supporting the preceding.[35]

He divides 1 (a) and 2 further into the aspects "Judgement and Evaluative" and "Procedures". He gives due emphasis to the first of these, which is perhaps a major factor in the nurse's claim to professional status. For instance, in 1(a), the nurse has to judge when the patient needs attention, and how much, if anything, he is capable of doing for himself. In regard to 2, he says about the registered nurse:

> ... she is the doctor's most valued assistant. She is his eyes, ears and hands for the twenty-three and three-quarter hours per day that he is not with the patient, ... she must have some of the training that he has to be able to judge how the patient is responding to treatment. In a sense, she often does take the first step in diagnosis, which is to make a preliminary and temporary judgement about how sick a patient is. On the basis of such a judgement she may or may not decide to call a physician ...[36]

The "procedures" involved in care include bed-making, bathing, positioning, etc., and in cure, the administration of medicines and the application of dressings, as well as indirect activities such as assisting physicians during

---

[35] Murray, op. cit., pp. 9-14.

[36] Ibid., p. 12.

operating procedures. His description of 1 (b), "psychological care", is a little vague, and he admits that "nursing activities designed to provide psychological care ... are as yet very poorly developed."[37] It could perhaps be summarized as developing a satisfactory relationship with the patient, building and maintaining his morale, and generally promoting a frame of mind which will assist his recovery.

The remaining activities include clerical work (related to patients' records and medical supplies) and logistics (fetching and distributing supplies and medicines, and traffic control). Some nurses are involved in administration, teaching, and research as well. Further information about the work done by nurses is to be found in activity studies carried out by the Ontario Health Services Commission and others.[38]

> The nurse is truly unique because she is the one and only person who ... will attend the patient on a continous basis. To do this, she must be willing to perform, in part, the role of almost every other health occupational group, as well as be the care specialist ... so that she is a bit of a physician, a bit of a dietitian, a bit of a physiotherapist and social worker, as well as the primary care giver.[39]

---

[37] Ibid., p. 11.

[38] Ibid., pp. 14-22, pp. 243-51, and Report of the Commission on the Healing Arts, op. cit., II, 159.

[39] Murray, op. cit., p. 31.

This leaves the nurse's specific areas of competence somewhat diffuse. Two interrelated trends characterize current thinking about how to define the roles of the various nursing personnel more precisely and how to make best use of the training of each group. One trend is to broaden the responsibility of the nursing assistants, to allow them to do some of the procedures at present restricted to registered nurses, and to re-allocate to other personnel, such as ward clerks and ward managers, many of the non-nursing tasks which nurses perform.[40] The other is to allow the nurse to participate more fully in cure activities by doing some of the things at present reserved for doctors. The medical profession is ahead of the nursing profession in wanting fuller cooperation from nurses.[41] Such trends would raise the professional status of the R.N. to a level approaching that of the more autonomous therapist.

Arrangements for educating the prospective nurse are quite diverse. There are five variants of the diploma course, mostly comprising three years and including the equivalent of one year's internship; three variants of the B.Sc.N. programmes, lasting four or five years; and "post-basic" programmes for the M.Sc.N. or for specialist certificates.

---

[40] Ibid., pp. 41-47.

[41] Ibid., p. 33.

The minimum entrance requirement for the diploma course is a Secondary School Graduation Diploma (Grade 12) with science options, though some schools impose higher standards such as minimum grade averages, or even Grade 13 in whole or in part. The nature and quality of the instruction offered varies enormously, particularly in the balance between theory and clinical practice. With the formation of some schools in community colleges and similar non-hospital settings, clinical practice has naturally presented some problems. The common syllabus items are "some instruction in basic physical sciences, social sciences, the traditional clinical nursing subjects (medicine, surgery, obstetrics, paediatrics and psychiatry), ... nursing history and philosophy, and public health."[42] Additional items may include operating room, intensive care, or emergency ward nursing. Changes in pedagogy have included greater emphasis on theory and principle rather than technique; unification of subjects by areas (e.g. the inclusion of nutrition as appropriate to other topics, rather than as an individual subject); broadening of the syllabus to include non-nursing subjects, particularly social sciences; and emphasis on health rather than sickness.

The university programmes are similar to the better diploma programmes, but include more from the natural and

---

[42] Ibid., p. 135.

social sciences, together with further elective courses which may be drawn from these areas or from the humanities. Murray states that B.Sc.N. students "receive considerably more instruction and practice ... in the specialized areas of public health, nursing service, leadership and administration, and nursing education."[43] They receive an amount of clinical practice similar to that of the diploma students, but there is no attempt at clinical specialization at this stage.

Although various specialist certificate programmes have been offered by university nursing schools, these have been greatly curtailed because the schools were obliged to concentrate their resources on basic B.Sc.N. training. However, the Committee on the Healing Arts recommended that these programmes should be continued (Recommendation 92)[44] and that programmes for updating and improving their qualifications and skills, together with appropriate financial incentives, be made available to nurses (Recommendation 93).[44] In particular, they recommended that "mature" diploma nurses be encouraged to enter degree courses, and that they should not be barred from this by lack of formal educational entry requirements (Recommendations 94 and 95).[45] If these

---

[43] Ibid., p. 144.

[44] Report of the Committee on the Healing Arts, op. cit., II, 199.

[45] Ibid., p. 201.

recommendations are accepted, an increase in the number and quality of continuing education programmes can be expected.

Registered Nursing Assistants

In the same way that the Registered Nurse has, in practice, a somewhat ambiguous relationship to the doctor with regard to area of responsibility, so too does the R.N.A. often encounter confusion in recognizing which duties are strictly reserved for the R.N. The profession of Registered Nursing Assistant was created in the 1940's to alleviate a shortage of R.N.'s. The suggestion is now being made that, as a corollary to increasing specialization among Registered Nurses, the work of the R.N.A. be upgraded to the R.N. level.

> Nursing Assistants work under the direction and supervision of a Registered Nurse, giving nursing care to convalescent and mildly ill patients and to patients requiring extended care, [and] help the R.N. with the care of more acutely ill patients. Their duties include taking temperature, pulse and respiration, giving simple treatments, and feeding and bathing patients.[46]

It seems that the R.N.A.'s duties lie mainly in the physical care and non-nursing areas, although Murray refers several times to R.N.A.'s carrying out procedures for which they are not formally prepared,[47] such as taking blood pressures and administering some medications.

---

[46] Health Careers, op. cit., p. 25.

[47] Ibid., pp. 38, 49.

The admission requirement is completion of Grade 10, or of Grade 8 for applicants who are over 25 years old. Full-time courses thirty-five weeks long are given in hospitals, Ministry of Health training schools, and colleges of arts and technology. Some 12-month evening courses are also available. High schools sometimes offer two-year courses specially designed for prospective R.N.A.'s, with appropriate academic subjects being studied at the Grade 11 and Grade 12 levels. All courses include a period of clinical practice, and some hospital-based programmes include special procedures authorized for R.N.A.'s in those hospitals.

Orderlies and Aides

> Beyond the 'registered' nursing groups, there is a wide assortment of non-registered persons who perform varying amounts and kinds of care and cure activities. The most common of these non-registered groups are orderlies and nurse's aides. ... Nurse's aides perform the most routine and unskilled of care duties on hospital wards ...[48]

The term "practical nurses" also seems to be used for people carrying out this kind of work.[49]

Murray describes the category of orderlies as:

---

[48] Ibid., p. 124.

[49] Ibid., p. 169, and Report of the Committee on the Healing Arts, op. cit., II, 203.

> among the most diversely organized and trained work groups doing nursing in Ontario hospitals. There seems to be no clear-cut policy in the province as to whether these men are responsible for nursing the sick or are just odd-job men.[50]

> Orderlies are males who perform simple direct nursing functions; however, their role as nurses is very poorly defined. As a result, they are either inadequately trained or they are used mainly as medical janitors and messengers.[51]

This is not always the case, though, and Murray points out that some hospitals do distinguish between "trained" and "untrained" orderlies:

> In the best-run hospitals [some orderlies are] given a program of in-service training comparable in many cases to that given to R.N.A.'s. These trained orderlies are then paid and worked accordingly.[52]

Murray is extremely critical of programmes of in-service training generally because of their lack of uniformity of quality:

> The vast proportion of such training as these people receive is on-the-job and hence would range in quality from abysmal to possibly as good as that of an R.N.A.[53]

The quality and extent of training depend upon various factors: first, the availability of staff qualified to do the training, and of the necessary facilities; second, the acuteness of the need for orderlies and aides on the wards; and third, the kind of work expected of the orderlies

---

[50] Murray, op. cit., p. 20.

[51] Ibid., p. 49.

[52] Ibid., p. 124.

or aides after training. In some cases the training offered might amount to "little better than a job orientation programme of a few hours a day for three or four weeks."[54] Summing up, he concludes that:

> regarding the situation for the training of orderlies and aides, there is, if anything, less concern among all relevant parties at the provincial level than there is over R.N.A. education. They seem to be the truly forgotten people in nursing.[55]

Nevertheless, the Committee on the Healing Arts did not seem to feel that the situation was a cause for concern:

> the kind of work they are called upon to do probably does not require a more formal kind of education programme than that being provided at the present time[55]

and furthermore, considering the large numbers of aides and orderlies now required,

> it would seem desirable to impose as few formal educational requirements as possible upon those who might be attracted to these employments.[56]

However, it is interesting to note that the Ontario Hospital Association's booklet, Health Careers, stated that "a number of formal programs of four to five months in length have been established at selected centres in Ontario."[57]

---

[54] Ibid., p. 170.

[55] Ibid., p. 171.

[56] Report of the Committee on the Healing Arts, op. cit., II, 203-4.

[57] Health Careers, op. cit. pp. 16-17.

Technicians

Electrocardiography Technicians

The position of electrocardiography technician involves a few basic procedures and the operation of a machine. This requires only a very slight knowledge of medicine which can be learned on the job.[58] There are no formal training programmes or advanced courses available for E.C.G. technicians, and the requirements for beginning this work are basic, usually completion of Grade 12. From time to time there are advances in E.C.G. technology, but these changes come from doctors and researchers and are not difficult for the technicians to adapt to.

Electrocardiography technicians have virtually no autonomy: the doctors requisition the cardiograms; the technicians carry out the necessary procedures, which include mounting the tracings on cards and making reports; the doctors read and interpret the tracings. Again in this profession, a tendency for the majority to be females (often former nurses) is linked with a pattern of low remuneration and very limited career prospects. There is no professional association for E.C.G. technicians. Several of the technicians in Hall's sample expressed interest in a special course which would include "additional medical training and patient care."[59]

---

[58] Oswald Hall, op. cit., p. 94

[59] Ibid., P. 95.

Electroencephalograph Technicians

The work of the E.E.G. technician usually takes place in a very small department with two to four staff. Although registration is possible, many hospitals employ unregistered technicians. They are not fussy about registration, especially since registered technicians must be paid more than the others.[60] Some hospitals prefer to train nurses for this work, because they can administer medications when appropriate, which a technician is not legally allowed to do.

Electroencephalograms are taken in connection with many neurological and psychiatric conditions, with head injuries, and sometimes as an accompaniment to brain surgery. The patient has to be calmed and relaxed, which may require considerable skill if he is frightened, very ill, seriously disturbed, or very young. Electrodes are applied to the head, and in some cases the patient may be given a drug by a doctor or a nurse for certain special procedures. Usually several recordings are made, with variations of electrode positioning and/or the patient's amount of activity. The technician marks the tracing to show the various phases of the test, and forwards it to the neurologist to be read. In addition to these fundamental aspects of his job, the technician also carries out routine maintenance of equipment, and writes and files reports.

---

[60] Ibid., p. 90.

E.E.G.'s are taken after they have been requisitioned by doctors. As is the case with E.C.G. technicians, E.E.G. technicians do not make diagnoses or prescribe treatment; their work is purely technical.[61] Supervision is exercised indirectly by the doctor or neurologist who interprets the electroencephalogram.

Ideally, technicians should have Grade 12 education and two years of practical experience, and then should pass in the examinations of the Society of E.E.G. Technicians. However, Hall notes that "there is little in the way of formal or structured training programs."[62] An obstacle to some individuals taking the examination is the requirement that their two years of practical experience take place under the supervision of a registered technicain, which for many people in smaller hospitals is not possible. Training generally occurs on the job, rather than in a school, and its quality varies considerably. Chief technicians usually have the responsibility for training assistants.

Currently the work is not undergoing a phase of rapid development and continuing education courses are lacking. Moreover, the tendency of hospitals not to be too concerned about employing registered technicians - especially as they command higher pay - and the fact that

---

[61] Ibid., p. 89.

[62] Ibid., p. 90.

upwards of half the profession are unmarried females and turnover tends to be high, also contribute to a lack of incentive for further education. In spite of this, some members of the profession at least are aware of the need for centralized theoretical training to supplement on-the-job experience.[63]

Inhalation Technicians/Therapists[64]

This is a relatively new occupation which has grown out of the work formerly done by oxygen orderlies. The function of these technicians is to administer a treatment known as "intermittent positive pressure breathing", which consists of forcing a patient to breathe a gaseous mixture in a certain rhythm by the action of a respiration machine, as prescribed by doctors. They have to know how to deal with medical gases, and in some hospitals they mix the chemicals for the machine. The technologists also sterilize and service their equipment, which is generally not complicated in its mechanical or electrical design.

Their professional responsibility is somewhat ill-defined. They administer treatment directly to the patient: in some hospitals they may do this under supervision of a nurse, while in others they mix the drugs themselves and take orders only from the doctors.

---

[63] Ibid., p. 91.

[64] Ibid., pp. 58-66.

As inhalation technology is a relatively new specialty, the formation of a professional association (Canadian Society of Inhalation Therapy Technicians) and the development of qualifications and a syllabus of study are recent. Training programmes were originally provided in the hospitals by the chief technologists. However, courses are now available in technical and community colleges such as Fanshawe College of Applied Arts and Technology, which has provided training since 1969. As the profession is new, qualified technicians have good chances of employment and promotion, although Hall observes that the technicians he studied were "on the whole, younger and less well educated than the other paramedical groups."[65] The entry requirement at Fanshawe College is Grade 12 education, and the course lasts for one year. Most technicians are male and have a strong career orientation. There is a possibility in the future of lucrative employment for them in private practice. Consequently professional motivation among inhalation technicians is fairly high.

Medical Electronics Technicians[66]

With the enormous increase in the number of electronic devices used in hospitals for diagnosis, treatment, and physiological monitoring, the operation of these devices has become a specialized area of activity in electronics.

---

[65] Ibid., p. 64.

[66] Ibid., pp. 53-4.

The medical electronics technicians have to acquire a knowledge of certain medical procedures and sterile techniques, since they may have to work in operating rooms or be present when these procedures are carried out on the patient. In some cases they design and calibrate new equipment. A two-year course is available at Algonquin College for applicants with Grade 12 education and previous training in electronics. A postgraduate course is also available at the University of Toronto's Institute of Biochemical Electronics.

Medical Laboratory Technologists

Hall observes that these formed the largest and the fastest growing group in his sample, and also the highest in demand and the shortest in supply. They are, moreover:

> the most significant occupation in terms of the proliferation of new specialties. Although the pace of change in most of the other paramedical fields is quite rapid, it does not match that of laboratory technology.[67]

The main fields of laboratory work are comprised of bacteriology, biochemistry, cytology, histology, and blood bank work. Although the laboratory may be headed by a doctor or a graduate scientist,

> the real responsibility for producing accurate results rests with the technicians themselves. ... This is not an unusual expectation. Most of the

---

[67] Ibid., p. 16.

> testing is highly standardized and routine. By performing the same relatively simple operations day after day the technicians learn where to expect mistakes and how to correct them. They know very well what range of results will be forthcoming.[68]

The technician's professional ability is based on a practical knowledge of biology and chemistry, as well as mastery of the skills of laboratory technique. In addition to these are specialized knowledge and skills relevant to the particular field of activity - hematology, bacteriology, etc. However:

> regardless of whether the superimposed component is primarily a matter of manual skill or practical knowledge, it quickly becomes reduced to a routine or series of routines which are repeated every day. After a short time the technician no longer needs the 'cookbook' [laboratory manual] to guide him. Unless his equipment becomes faulty or an unusual case arrives, his activity consists of reflex repetition of a few well-learned techniques ... When special cases do arise, his capacity to deal with them is limited. The ordinary technician has neither the background depth in theory to do his own scientific trouble-shooting, nor the mechanical knowledge to repair the more complicated machinery.[69]

Entry to the profession requires seven Ontario Grade 13 credits or their equivalent. Training for the general certification of the Canadian Society of Laboratory Technologists usually consists of a year's

---

[68] Ibid., p. 28.

[69] Ibid., p. 33.

lectures covering in a general way the fields of anatomy, physiology and mathematics and with more detail clinical chemistry, microbiology, hematology, blood banking and histology. This is followed by a year of instruction on the job. Trainees may attend a central school or be trained in their own hospital, though some hospitals operating training programmes are not certified by the Society. An advanced qualification can be taken three to five years later by eligible candidates. There is a parallel course for qualification in a specialty. Further progression is possible to the level of Licentiateship (by examination) and Fellowship (by election). When a new recruit enters a laboratory he normally goes through a period of informal on-the-job training in the techniques used in that particular laboratory. Specialization may not be extreme: in small laboratories technicians may do tests from different fields, and in large laboratories technicians are deliberately rotated.[70]

Although refresher and advanced courses are available, some of which can be taken by correspondence, attendance at an institution other than the hospital may be required for part of the course and for sitting the examinations. This may be inconvenient and financially

---

[70]Ibid., pp. 32-3.

impossible for many technicians since many hospitals do not provide paid leave of absence or financial support for this purpose, nor do they encourage their technicians to seek further qualification, and may offer no incentive by way of promotion or salary increase. Few laboratory technicians are willing to make the necessary sacrifices for advanced education in their profession.[71] Many of the technicians are young women who take the job as a temporary step on the road towards marriage, and then retire permanently. Those who do make a career in this work usually have to be content with subordinate posts, as men are usually preferred for the higher positions. Even in these posts the salary differentials are not very great. Understandably, the profession is characterized by high turnover and relatively low professional motivation among the large majority of technicians, with very little interest in continuing education.

Nuclear Medicine Technologists

This branch of paramedical technology is discussed by Hall[72] in a chapter headed "Radio-isotope Technicians", which is possibly a more restricted term in its connotation.

---

[71] Ibid., p. 46.

[72] Ibid., pp. 67-72.

The work involves the use of radio-active substances for diagnosis and treatment, the results being obtained through chemical and biochemical tests, and through electronic scanning devices. The radio-isotopes are usually administered by injection. All the departments in Hall's survey were under the supervision of medical directors. The technicians, most of whom are female, come from diverse backgrounds such as nursing, radiography, and laboratory technology, and their specialized training is acquired in about six months of on-the-job experience; some of these technicians are graduates in chemistry or pharmacy. At the time of Hall's study, there were no specific training programmes, though some senior technologists had taken courses in nuclear medicine. However, the Ontario Hospital Association's booklet Health Careers[73] indicates that information on programmes in nuclear medical technology can be obtained from the Ontario Society of Radiological Technicians. Its parent (Canadian) society has formed a nuclear medicine branch to cater to this new profession, which does not have an association of its own.

Radiological Technicians

X-ray work has developed considerably in recent years with the advent of new equipment, techniques and procedures. This has led to expansion of departments

---

[73] Hospital Careers: Requirements and Schools of Study (Don Mills, Ontario: Ontario Hospital Association, May 1972).

and to specialization in the larger hospitals; for instance, some registered technicians will specialize in cardiovascular work, while film processing is done by darkroom technicians, instead of by the radiographers as is the case in small hospitals. In some hospitals, "x-ray nurses" have taken over the preparation of patients for radiography. The technicians feel that the nurses' help is not necessary,[74] that they themselves are quite capable of handling the whole domain of x-ray work:

> The technician must be versatile, an efficient and careful operator of complex technical equipment; she must be a capable and friendly handler of human beings, many of whom are ill; and she must be able to develop film, judge its quality, and see any flaws. ... Unlike the physiotherapist, however, the technician has no latitude in choice of treatment. A specific x-ray has been ordered by a doctor; that x-ray must be taken. ... The degree of independence of the technician is, therefore, strictly limited. She is very much the technician, guided by specific orders from a medical man and trained in a limited number of set procedures. The relationship to the patient is transitory and brief - one of cooperation rather than healing. ... All her work is judged daily ... under the close scrutiny of the doctor.[75]

On the other hand, technicians enjoy a considerable amount of independence in the actual execution of their

---

[74]Hall, op. cit., p. 73.

[75]Ibid., p. 77.

duties, as generally only students are subject to direct supervision. Supervision may be said to be delayed to the stage when the results of their work are scrutinized by the doctors. The degree of autonomy of radiological technicians is midway between that of laboratory technicians and that of physiotherapists.[76]

X-ray technicians have quite uniform qualifications and training. Entry to the training programme, which is usually in hospitals, requires completion of Grade 12 or 13. After two years of this programme, a student becomes a junior technician. There are no specialized or advanced courses for radiological technicians, and promotion is based on experience and performance.[77] In Ontario, plans are being made for a centralized training programme outside the hospitals.

Medical Photographers

The work of the medical photographer is of special importance in teaching and research, both inside the hospitals and in connection with publication of the results. It may embrace photography of patients in the ward, or operating room or studio, or of anatomical and pathological specimens and microbial cultures, as well

---

[76] Ibid., p. 80.

[77] Loc. cit.

as the preparation and photography of diagrammatic and illustrative material for films, slides, and books. This work requires a knowledge of sterile technique and an understanding of the medical procedures or conditions which are to be portrayed. Training in basic photography is obtained at a community college, and followed by a period of apprenticeship in a hospital, where medical aspects of the work are learned.

Medical Record Personnel

The medical record departments serve a dual function:

> maintaining a continuous record of each patient for the attending doctor's use and providing material for research being done by the medical staff. These tasks fall somewhere between the highly technical work done by technicians in the laboratories and the independent 'professional' work done by physiotherapists, occupational therapists, and speech therapists. ... The medical record librarians have close contact with the medical staff, but there do not appear to be formal relationships whereby the medical staff is given authority to influence the work of the medical records department. Indeed, one of the responsibilities of the department involves initiating disciplinary action against members of the medical staff who are derelict in their duties relating to completing charts and maintaining accurate records of their work.[78]

The medical records department thus stands in the position of providing service both to the hospital administration and to the medical personnel of the hospital.

Medical Record Librarians

The function of the medical record librarian is to compile and maintain records of the patient's condition and treatment; this information then is used for clinical, research, and administrative purposes. Originally a purely clerical operation, it has developed over the years with the sophistication of coding systems:

> The tasks... require a combination of professional and lay competence. The worker must know medical terminology and operations in order to perform an essentially administrative task, that of filing and coding information on

---

[78] Report of the Committee on the Healing Arts, op. cit., II, 40.

> patients. While the work is not highly technical [like] radiography, ... it is not largely 'social' as is occupational therapy. It appears to be a hybrid area that combines both features.[79]

The medical record librarian, who has recently begun to be called a medical record administrator, is assisted by medical record technicians and clerks. The principal work of the librarian is to analyze the charts, assigning codes from the ICDA Index, which is an international classification system adopted for the indexing of hospital records. Indexes are made for diagnoses, for operations and for names of physicians. Statistical summaries are also prepared. All this information is then incorporated into a master index. The technicians check charts and do filing, while the clerks perform typing and similar activities.

In order to be able to do the coding, the medical record librarian should have some knowledge about most of medicine, from diagnosis to operations and prognosis. In some hospitals the librarians even verify that the diagnosis conforms to laboratory results and that the treatment indicated is correct in relation to the diagnosis. Hall points out that although it would appear that intensive training is necessary for this work, the librarians have to become familiar with only a few of the common surgical operations.[80]

---

[79] Hall, op. cit., p. 96.

[80] Ibid., p. 99.

Entry requirements for the training programme are completion of Grade 13 and the ability to type. The 12-month course covers such topics as anatomy, physiology, and microbiology, medical terminology, statistics, coding, filing, committee work, clinical photography and micro-filming. Both theoretical and practical aspects are covered. The course is usually held in a hospital or a school associated with a hospital, with working librarians as teachers. Suggestions have been made for extending the course to two years. Students take the examination of the Canadian Association of Medical Record Librarians, success in which entitles them to become Registered Record Librarians.

Medical Record Technicians

Courses of training for medical record technicians have recently been made available. There are two ways of becoming accredited for this position. First, for personnel already working in a department, the Canadian Hospital Association offers a nine-month extension course by correspondence. This is followed by a three-week practicing session in a hospital. Candidates must continue to be employed in a records department for the duration of the course. Alternatively, candidates with a Secondary School Graduation Diploma can enter a full-time course in a community college, which lasts for one or two years. In both cases, the student may then write the examination of the Canadian Association of Medical Record Librarians to obtain the qualification of Accredited

Record Technician.

Dietitians

The scope of the dietitian's work may include healthy as well as sick persons. Typical conditions where the dietitian's advice may be required are allergies, metabolic disorders, vitamin and mineral deficiencies, diabetes, and gastro-intestinal disease. The therapeutic dietitian may also do preventive work in connection with health education for children, adolescents, and old people, and may develop special diets for groups such as athletes or the poor.

It can be seen that the dietitian requires a sound knowledge of nutrition and its varied relationships with health and disease, together with an appreciation of its economic aspects. In a hospital the dietitian also exercises an administrative function, with overall responsiblity for food services for both patients and staff. With these may be coupled teaching, staff training, health education, and perhaps research.

The dietitian works with the physician or surgeon, whose instructions are usually of a very general nature and are interpreted in the light of the dietitian's special expertise. The dietitian thus enjoys considerable personal responsibility and autonomy. The work may also involve direct contact with patients and their families in explaining how to

maintain specific nutritional and dietary patterns.

The prospective dietitian must have completed Grade 13, with mathematics and science courses, and must undergo a three- or four-year course in foods and nutrition at a university accredited by the Canadian Dietetic Association. Registration as a "Registered Professional Dietitian" is available optionally upon completion of an additional year's internship in a hospital or upon meeting other similar conditions laid down by the Canadian Dietetic Association. As this is not a legal requirement, some dietitians may not be registered.

Hospital Administration

Hospital Administrative Officers[81]

The internal organization of a hospital is composed of two branches, medical and lay, which are linked by the Board of Governors. The lay branch, comprising the nurses, paramedical and "non-professional" staff, is headed by the Chief Administrator. He does not have authority over the full-time medical staff, who are not hospital "employees", except that he can act in an advisory capacity to the Medical Director or the Chief of Medical Staff.

The administrator is appointed by the hospital Board of Governors, and is responsible to it. His task is to ensure

---

[81] Health Careers, op. cit., pp. 28-9.

the proper organization and maintenance of the facilities provided for the use of patients and medical staff. He is responsible for interpreting and implementing the policies of the hospital as established by the Board of Governors and must record and report to them all activities within the hospital. He acts as a coordinator of all departmental activities and supervises and controls all financial matters.

He must be aware of the social and economic aspects of health care and social welfare and must keep himself informed on developments in the field of public health. The administrator must have a broad knowledge of all aspects of patient care. He should be familiar with medical technology, the clinical aspects of disease, and commonly used diagnostic tests, along with therapeutic measures and the use of clinical equipment. In addition, he must be aware of the legal aspects of hospital administration as they relate to medical and nursing practice. He must also be competent to look after the financial affairs and business management of the hospital, including the variety of schemes for health insurance, and he must handle the public relations of the hospital. He must be aware of the possiblities for the estabishment of educational and research programmes.

Needless to say, one individual could not be expected to cope single-handed with all the above, and the Chief Administrator usually has a staff of assistants with quali-

fications similar to his. In the larger hospitals, finance, purchasing, personnel, and public relations may be handled by specialists qualified in these fields. Individual services such as housekeeping, catering, laundry, engineering, and data processing may also be headed by appropriately qualified staff. There is a special relationship in the case of the nursing personnel, who are responsible to the administrator through the Matron or Director of Nursing, but who also execute the instructions of the medical staff directly.

Training for hospital administrators is provided through a two-year postgraduate university course, including one year's residency, or a two-year correspondence course from the Canadian Hospital Association, including two-month resident summer sessions. Administrators are usually laymen, though some originally qualified as doctors or nurses.[82]

Miscellaneous

Clinical Psychologists

Clinical psychology is a branch of applied psychology, which uses knowledge of human behaviour:

> to produce the most effective development of human potential and the alleviation of human disability arising from mental, emotional or physical causes.[83]

Psychologists are mostly employed in psychiatric and general hospitals, guidance and addiction clinics, and in penal and reform institutions. In most hospitals and clinics the psychologist spends his time making psychological diagnoses

---

[82] Report of the Committee on the Healing Arts, op. cit, II, 27-8.

[83] Ibid., II, 296.

through tests and assessments. The range of activities for those employed in mental health institutions is far greater than in general hospitals and clinics, and may include the conducting of various kinds of therapy sessions for individuals and groups, involvement in programmes of treatment, the training of other staff, and research. Many clinical psychologists feel that when working in a hospital situation they face the problem of faulty demarcation of areas of authority which tend to inhibit the optimum use of their capabilities. Such difficulties seem to occur less often in other work situations such as addiction centres and reform institutions.[84]

The education of clinical psychologists takes place in universities and may comprise a three-year general arts plus a two-year Master's programme, or a four-year honours undergraduate degree in psychology and a one-year Master's programme, either of these then being followed by a three-year Ph.D. programme. The Committee on the Healing Arts is severely critical of several aspects of the situation in which practising clinical psychologists find themselves, especially the fact that there are no "established minimum standards in academic and clinical work or in specialist

---

[84] Ibid., p. 300 ff.

studies."[85] Further, they criticize the absence of:

> adequate internship programs for applied psychology from which the student can gain experience in dealing with people and handling clinical situations.[85]

It is felt that most students finishing their doctoral work in psychology have not had much experience with clinical practice, including the diagnosis and treatment of behaviour disorders. This lack of experience in clinical work is one of the reasons why people from other disciplines in the mental health field hesitate to accept psychologists.[86]

At present, clinical psychologists can only deal with patients referred to them by doctors. The Committee on the Healing Arts recommended that they should be able to take patients directly, provided that they arrange for a medical examination to exclude possible physical or organic causes of psychological symptoms.[87]

Although psychologists must be registered by the Ontario Board of Examiners in Psychology in order to practise, they can become registered regardless of their area of specialization at university. The Committee recommended that only those who have had clinical training in a university be allowed to practise in the field of mental health, and that a Clinical Psychologists Certification Board be created to enforce this.[88]

---

[85] Ibid., p. 301.

[86] Ibid., p. 300.

[87] Ibid., p. 305.

[88] Ibid., p. 306.

A further recommendation was that a programme of continuing education be made compulsory, and that maintaining registered status be dependent upon the successful completion of periodic courses of study in the universities.[89]

Psychometrists

The customary function of psychometrists is to:

> carry out the more routine diagnostic tasks and participate in treatment programs under supervision in psychological settings. ... In general, they administer, score and interpret tests of intellegence, aptitude and personality. They perform record keeping and other clerical duties related to psychological treatment. Under supervision they participate in psychotherapeutic and activity programs of an individual or group nature, and assist in the application of research techniques and in the training of non-professional staff.[90]

For various reasons discussed by the Committee on the Healing Arts a serious shortage of clinical psychologists in Ontario has been countered by the employment of other psychological personnel.[91] As a result, the ratio of psychometrists, and the general level of the functions they perform, are somewhat higher than would ordinarily be the case.

Generally the psychometrist has a Bachelor's or Master's degree, usually in psychology but sometimes in a related discipline such as sociology or anthropology. The only programme in Ontario which is specifically in psychometry is offered by

---

[89] Ibid., p. 307.

[90] Ibid., pp. 308-9.

[91] Loc. cit.

the University of Waterloo, and according to the Committee it has a strong practical orientation.

Biologists

In the administrative structure, graduate scientific personnel like biologists and clinical chemists inhabit a no-man's-land:

> While they may hold a B.A. or an M.A. or even a Ph.D., they do not have the medico-legal status of an M.D. and so cannot officially assume the same degree of authority and responsibility as a medical director. Despite their superior professional experience they are legally responsible only to the same limited extent as are head technicians. In those laboratories with a doctor and a scientist on staff, the latter is always subordinate to the former. He is, however, universally placed in a higher position of authority than the head technicians. ... The scientist may have to sign outgoing reports but he does little direct supervising. Most of his time is devoted to special testing, methods development, or research.[92]

Some laboratories which are sub-units or departments of larger laboratories are in the charge of a graduate scientist who may in turn have other graduates working under him, as well as technicians.

---

[92] Oswald Hall, op. cit., pp. 27-8.

PHARMACISTS, HEALTH UNIT PERSONNEL, AND SCHOOL BOARD HEALTH WORKERS

The professions which were included in the second survey are the following:

Pharmacists

Nurses
- R.N.'s
- R.N.'s with Degrees
- R.N.'s with Diplomas
- Public Health Nurses
- V.O.N.'s

Health Inspectors

Audiometric Technicians

Medical Lab. Technicians

Dental Assistants

School Social Workers

School Psychometrists

Guidance Counsellors

Approximately a fifth of the pharmacists who responded to the questionnaire are employed in hospitals, while the other four-fifths are retail pharmacists. The nurses have been discussed earlier, pp. 189-198. The Victorian Order of Nurses and Public Health Nurses as such are not given special consideration. Similarly, medical laboratory technicans, social workers and psychometrists have already been described. Although there were three dental assistants included in the hospital survey, there were more in the survey of pharmacists, health unit personnel and school board health worker; they are dealt with, then, in this section. Part of the category of

Guidance Counsellors, the Vocational Rehabilitation Counsellors, have been discussed previously; they are not given further treatment here. Neither has consideration been given to Health Inspectors and Audiometric Technicians.

Dental Assistants

There is a tendency for poor development of dental departments within hospitals, and hence the auxiliary personnel are usually employed by dental practitioners rather then by institutions. Moreover, dental auxiliaries have found a less ready acceptance by the profession which employs them than is the case with auxiliary personnel in medicine. The dental profession has tended to be "protectionist" in its outlook - an attitude which received considerable criticism from R.K. House and the Committee on the Healing Arts. [1,2] This had tended to restrict the employment of auxiliaries and to impose severe limitations on what they are allowed to do.

The terms "Dental Nurse" and "Chairside Assistant" are often used to mean "Dental Assistant", who:

> looks after the sterilization of instruments, assists with the taking of x-rays, and prepares such materials as are necessary for the remedial work which the dentist carries out.[3]

In addition, she may act as a secretary-receptionist, "arranging appointments, answering the telephone, maintaining adequate

---

[1] Report of the Committee on the Healing Arts, op. cit., II, 121-22.

[2] R.K. House, Dentistry in Ontario: A Study for the Committee on the Healing Arts (Toronto: Queen's Printer, 1970), p. 81 ff.

supplies and handling such matters as patient records and monthly statements."[3]

It is possible to learn much of these functions on the job, but one-year courses are available from community colleges and in certain high schools at the Grade 11 and 12 levels. The Ontario Dental Nurses and Assistants Association offers certification to graduates of these courses.

Pharmacists

The role and function of the pharmacist are in general fairly well known and have recently been studied by the Committee on the Healing Arts.[4] The summary given here is based mainly on the study, together with information derived from an interview with Mr. Harvey Sullivan who, at the time, was Director of Pharmacy in Victoria Hospital, London.

The profession's most familiar image is that of the retail pharmacist from whom the public buys proprietory drugs and medicines or has prescriptions dispensed. A similar function is carried out in hospitals by the hospital pharmacist. These two categories, particularly the former, account for the large majority of the profession. Other members of the profession, though a much smaller number, are engaged in pharmaceutical manufacture and marketing (mainly research) and in teaching.

---

[3] Health Careers, op. cit., p. 7.

[4] "Pharmacy," Report of the Committee on the Healing Arts, op. cit., II, 216-43.

Pharmacy is a profession which requires legal registration because, in the course of his work, the pharmacist must act in accordance with numerous federal and provincial Acts and Regulations governing the dispensing and sale of drugs, poisons, and narcotics. He is also responsible for checking that prescriptions are written by qualified practitioners and for verifying with the practitioners any prescription he considers doubtful. He must be particularly watchful for overdosage and incompatibilities between drugs. Since the pharmacist is a highly trained professional who protects the public, he is in return granted considerable powers of self-regulation and self-discipline.[5] A curious legal anomaly is that there is no statutory requirement that hospital pharmacies be operated by registered pharmacists.[6]

The character of the larger section of the profession, retail pharmacy, has changed greatly, since the preponderance of prescriptions is now for proprietory drugs; the pharmacist now does little compounding himself. Studies made in the 1960's also showed that 33% of retail pharmacists spent less than half their time filling prescriptions, and that on the average, only half of the retail pharmacist's time "is occupied in functions which are his direct and/or professional responsibilities under the Pharmacy Act."[7] In the smaller pharmacies, of course, the pharmacist spends much of his time

---

[6] Ibid., p. 225.

[7] Ibid., p. 223.

selling general merchandise, which he is obliged to do in order to obtain an adequate livelihood. Despite this trend, the Committee on the Healing Arts makes some interesting comments:

> We believe that the pharmacist should be regarded as a professional practitioner and not a mere technician. ... [He] must continue to be responsible for the accurate dispensing of prescriptions and for quality control. The introduction of hundreds of new drugs each year has forced the ... pharmacist to be cognizant of very different compounds and substances ... which may be dangerous to patients if misused.
>
> The pharmacist also acts as a consultant to the general public and ... may act as a check on possible physician errors when prescribing ... The pharmacist often advises his customers about cold or cough remedies, first aid equipment, and minor ailments which do not require the attention of a physician ...
>
> [Moreover], it is possible that in the future increasing numbers of physicians may come to regard pharmacists as useful consultants on pharmaceutical products, particularly in smaller centres.[8]

In an interview with some retial pharmacists in London, Ontario, we were told that the pharmacist's most important areas of concern vis-à-vis the general public were the monitoring of overdosage of patients who have obtained prescriptions from several physicians and the detection of possible incompatibilities among prescriptions given to a patient by different physicians treating him for different conditions. Mr. Sullivan at Victoria Hospital described proposals for an on-line system for the monitoring of patients' prescription records by retail pharmacies in cases where incompatibilities

---

[8] Ibid., p. 224-25.

were suspected.

All practitioners in retail pharmacy must be licensed by the College of Pharmacy, but only those in Section I of the Register have signing or purchasing privileges for narcotics and controlled drugs. These are owners or managers. Others working as employees, or who are teaching or retired, or not in practice, are listed in Section II. Section III includes professionally-qualified directors of corporations operating retail pharmacies. Offenders against the Pharmacy Act are subject to disciplinary action or prosecution by the College.

As mentioned earlier, hospitals are exempted from the requirement to employ registered pharmacists:

> In 1965 some 35% of the 179 hospitals in Ontario did not have the full or part-time services of a pharmacist, and of the 83 hospitals containing fewer than 100 beds, 59 were without a pharmacist.[9]

It is ironical that in the retail business safety measures are so strict that the pharmacy cannot be open while the pharmacist is not there, whereas it is not required that a pharmacist ever be in attendance in a hospital pharmacy.[10] One solution has been to make an arrangement with a local pharmacist to work in the hospital on a part-time basis. However, the Committee on the Healing Arts states that it did not receive:

---

[9] Loc. cit.

[10] Ibid., p. 526

> evidence to indicate that abuses exist in hospitals at present in the dispensing of drugs, and the presence of physicians ... should provide some assurance of careful dispensing procedures even in the absence of a full-time pharmacist.[11]

While the pharmacist in a smaller hospital may work part-time and spend his time mainly in dispensing, pre-packaging and marking dosages, the person in the larger hospital may also provide a drug information service for physicians and nurses and assist in the design and execution of controlled trials of new drugs. In a large hospital drugs are pre-packaged in measured doses for each patient for the whole day. This relieves the nurse of all responsibility except for seeing that the package is distributed to the right patient and that it is taken at the appropriate times, but correspondingly it increases the responsibility of the pharmacy.

A student who has completed Grade 13 may enter the Faculty of Pharmacy at the University of Toronto for a four-year course for the B.Sc. (Pharm.) or may take a pre-pharmacy year at certain other universities in the province of Ontario, followed by three years of study in Toronto. The syllabus:

> attempts to give the student a broad background in the physical and biological sciences, extensive study of the four basic pharmaceutical sciences (pharmaceutics, pharmaceutical chemistry, pharmacology and pharmacognosy), and pharmacy administration, plus specialized study in the student's chosen field of practice.[12]

---

[11] Ibid., p. 226

[12] Ibid., p. 232

Before licensure, University of Toronto graduates must spend a 12-month apprenticeship under the supervision of an approved pharmaceutical chemist. Special arrangements regarding graduates from outside Ontario require that candidates pass an examination in the pharmaceutical jurisprudence of Ontario and possibly pass other examinations or fulfil special conditions.

Graduate programmes for the M.Sc. and Ph.D. are also available, particularly for those interested in teaching and research. There is no continuing education requirement for pharmacists, although the Faculty provides seminars and evening classes, attendance at which is "encouraged" by the Ontario Pharmacists Association and the provincial branch of the Canadian Society of Hospital Pharmacists.

There is no doubt that the professional responsibility of the pharmacist is becoming increasingly important with the proliferation of new drugs. Doctors have increasing difficulty in keeping abreast of new drug information; moreover, Clute found that many of the physicians in his 1962 survey felt keenly their inability to evaluate manufacturers' claims in a satisfactory way.[13]

---

[13] K.F. Clute, The General Practitioner (Toronto: University of Toronto Press, 1963), p. 354.

PROFESSIONAL HEALTH WORKERS IN PRIVATE PRACTICE

The categories contained in this survey include:

Doctors

Dentists

Optometrists

Drugless Practitioners
Osteopaths
Chiropractors

Each of these professions is described in the following, although only the doctors and dentists are discussed in the analysis of the data, because the samples of optometrists, osteopaths, and chiropractors were too small, and the results not representative of these professions.

Doctors

In the theatre of medicine the doctor is usually regarded as the prima donna. Doctors:

> tend to view themselves as individualists, each going his own way to do what is required for his patients. Each sees himself as autonomous, and not subordinate to the commands and orders of another.[1]

The reasons for this fierce individualism are not hard to find. Doctors form a highly selected group, chosen for their ability to complete a lengthy and rigorous course of training at a very high level, and proven in their ability to assume personal responsibility in matters of life and death. As a group, they subscribe to high standards of professional and ethical conduct, and discipline those members

---

[1] Oswald Hall, op. cit., p. 10.

who fail to conform. To the layman the doctors appear to be a closely-knit profession because in matters of public policy they present a united front, but in their internal relations and everyday practice this is not the case. The true situation is reflected in the patterns of medical practice: 63% of doctors in Ontario who responded to a survey made in 1967 were in solo practice, and another 13% in two-men partnerships.[2]

The work situations of doctors are various. They may be in private practice (solo, partnerships, or groups); or they may work in hospitals or clinics. Some work in teaching or research, the latter taking place most often in universities, though also in private and government research institutes, and in the research departments of pharmaceutical companies. They may work as clinicians or administrators for public health departments, school boards, laboratories (public and private), or as permanent officials of medical organizations.

Doctors in clinical practice may operate as general practitioners or as specialists. The ratio of G.P.'s to specialists in Ontario in 1969[3] was as follows:

General Practitioners	3,388
G.P.'s with specialist interests	988
	4,376
Specialists	4,125
	8,501

---

[2] Report of the Committee on the Healing Arts, op. cit., III, 161.

[3] Ibid., p. 187.

In recent years there has been a relative decline in the number of general practitioners which could well turn into an absolute decline, although it is widely agreed that general practitioners have a special and unique role.[4] The reasons for the growth of specialization are complex and inter-related. Specialization is an inevitable trend in a technological society, and affects medicine as it does every other profession. General practitioners are not paid as well as specialists and their hours are almost always longer. They tend to be professionally isolated, partly because their access to hospitals is limited. The status of the general practitioner is lower, and the medical schools are partly to blame for this, bacause the teaching staff is comprised of specialists, and because the clinical work of students is done almost exclusively in hospitals: students do not observe family practice and consequently do not become interested in it.[5]

A doctor who wishes to practice as a specialist must undergo, beyond the normal training, a period of education and training in an approved institution - in some cases for as long as five years - and pass examinations of the Royal College of Physicians and Surgeons of Canada, which will entitle him to receive a specialist certificate or the Fellow-

---

[4] Ibid., pp. 185-86.

[5] Ibid., pp. 190-93.

ship of the Royal College.[6] About 75% of all specialists are found in the eight specialties of anaesthesia, general surgery, internal medicine, obstetrics and gynecology, ophthalmology, paediatrics, psychiatry, and diagnostic radiology, although there are 20 areas of specialization altogether.[7]

One of the conditions of licensure in Ontario is the completion of a year's internship in a hospital after graduation. Usually there is a rotating internship, which helps the young doctor become familiar with all the departments of the hospital. He is almost in a mid-way position between general and specialist practice at this point. There are also in hospitals senior interns, who are fully qualified and registered doctors undergoing training as specialists.

The Committee on the Healing Arts distinguishes between "graduate" education (full-time study after the M.D. leading to a degree such as the M.Sc., M.Cl.Sc., or Ph.D.), "postgraduate" education (full-time study leading to a qualification such as a certificate or diploma), and "continuing" education, which is usually part-time and consists of updating or refresher courses for practitioners.[8] The first two are mainly university-based, and intended for the

---

[6] Grove, op. cit., p. 151 ff.

[7] Report of the Committee on the Healing Arts, op. cit., I, 160.

[8] Ibid., II, 73.

prospective specialist. The last is intended mainly for the general practitioner, although it is also available for specialists through scientific conferences and meetings of specialists' societies. Members of the College of Family Physicians of Canada are obliged to spend a minimum of 100 hours a year on their continuing education.[9] Various other programmes are available through universities, hospitals, and societies.[10] The Committee on the Healing Arts adopted as a general principle that continuing education be mandatory for all health professions and particularly for the "senior professions"[11, 12] (Recommendations 11, 12). Although the Committee did not specify the means by which this was to be achieved, it would, if implemented, set in motion an enormous educational effort. Recommendations were also made for the admission of all practitioners to hospital privileges (Recommendation 351)[13] because the Committee recognizes, as do Clute and others, "the long-range detrimental effect of exclusion from educational experience within the hospital upon the competence of a physician."[14]

---

[9] Grove, op. cit., pp. 237-43.

[10] Report of the Committee on the Healing Arts, op. cit., II, 78 ff.

[11] Ibid., p. 81.

[12] Ibid., III, 69-76.

[13] Ibid., p. 206.

[14] Ibid., II, 94.

The significance of these various recommendations for the present study is the increase in continuing education activities, which could be expected to lead to an increased demand for information and materials, and the fact that if general pratitioners had hospital privileges they would also have access to network service points and libraries in hospitals.

Dentists.

Dentistry is the only profession to have achieved a status parallel to that of medicine. Its members undergo a training of five or six years and receive a doctoral degree (D.D.S.) as the basic qualification, with the right to the professional use of the title "Doctor", which they alone share with physicians. The dental profession is highly self-regulatory - perhaps even to a greater extent than the medical profession - although the Committee on the Healing Arts felt that the powers conferred on it had sometimes been exercised more in the interests of the profession than of the public.

Dentists practice largely as independent, solo, general practitioners. About 6% of dentists in Ontario practised a specialty in 1968, orthodontics, oral surgery, paedodontics, periodontics, and prosthodontics being those recognized at the national level. The effect of the tendency towards solo practice is that dentists are largely cut off

from the sort of professional contact that occurs in the case of the medical profession. As yet, dental practice in hospitals is very limited. It is therefore relatively more difficult to keep up with advances in dental techniques or technology. In the latter case, too, the dentist is obliged by the condition in which he practices to be self-sufficient, so that the cost of new technological developments falls entirely on the individual dentist rather than being provided as a joint service for a number, as happens in the case of doctors using equipment in hospitals. R.K. House believes that:

> because it has been so completely decentralized, dentistry has not participated fully in the general advance of medical and related technology.[15]

The position is further aggravated by restrictions imposed on general practice being carried out by specialists, and on the employment of auxiliary personnel, which might have made the dentists' use of new devices more economical.

The only two dental schools in Ontario are at the University of Toronto and the University of Western Ontario. After one or two years (respectively) of pre-dental education, students enter the professional programme, which consists of two years of basic sciences (anatomy, histology, biochemistry, physiology, pathology, bacteriology, and pharmacology) followed by two years of clinical training which includes some hospital experience. At the graduate level, courses are offered

---

[15] R.K. House, Dentistry in Ontario: A Study for the Committee on the Healing Arts (Toronto: Queen's Printer, 1970), p. 68.

for the Ph.D or M.Sc. Dent., to prepare research workers, while specialization in clinical fields such as public health and orthodontics can be done through diploma courses or a programme for the B.Sc. Dent. The length of the diploma studies varies from about eighteen to thirty-two months.[16] Continuing education programmes are offered by the dental schools, by dental societies, and by the Royal College of Dental Surgeons of Ontario. As with other professions, the Committee on the Healing Arts recommended that evidence of continuing competence be made a condition of relicensing.[17] It also recommended the provision of financial assistance to students willing to undertake specialty training, and the establishment of an additional faculty of dentistry in the province.[18]

Optometrists

The field of eye care is another area where disagreement has occurred between the medical profession and another profession. On one hand, there are both ophthalmologists, who are certified specialists, and physicians who are not ophthalmologists but who devote much of their practice to eye care. On the other hand, there are the optometrists,

---

[16] Report of the Committee on the Healing Arts, op. cit., II, 132-33.

[17] Ibid., III, 56.

[18] Ibid., II, 139-40.

highly qualified laymen who are licensed to deal directly with the public without prior referral. Both are:

> qualified to examine patients and prescribe corrective measures where there is no indication of disease, but only the ophthalmologist is qualified to treat pathological conditions of the eye. ... [However] optometrists claim that, while they do not treat diseases of the eye, they are trained to detect them.[19]

The profession has been legally controlled since 1919[20] and the latest Optometry Act (1962) defines the role of the optometrist as:

> the measurement of, ... by any means other than the use of drugs, the refractive or muscular condition of the eye, the prescribing and ophthalmic dispensing of ophthalmic appliances, and prescribing ocular calisthenics for the relief or correction of any visual or muscular error or defect of the eye.[21]

Having reached a diagnosis, the optometrist undertakes treatment, or refers the patient to a medical man if the problem is outside his competence. He may treat the patient by means of lenses, filters, etc., or by orthoptics (eye exercises). He checks and fits ophthalmic appliances which have been prescribed by himself or by an ophthalmologist. Optometrists are legally prohibited from using diagnostic drugs.[22] Most optometrists are in private practice, though some work in commercial establishments. Registration and licensing are carried out by the College of Optometrists

---

[19] Ibid., II, 224.

[20] Ibid., I, 79.

[21] Ibid., II, 247.

[22] Ibid., p. 251.

following an examination; registration is renewable annually. The professional society of optometrists is the Optometrical Association of Ontario.

Education for optometry is given at the University of Waterloo, which serves the whole of English-speaking Canada. The course comprises one pre-optometry year and four years of scientific, clinical and professional training; graduates are awarded the degree of Doctor of Optometry (O.D.). Refresher courses are available and post-graduate training for the Ph.D. has recently begun.

Drugless Practitioners

The Medical Act (1960) states that "No person not registered shall practise medicine, surgery or midwifery for hire, gain, or hope of reward," although, as the Committee on the Healing Arts points out, serious legal problems have arisen through lack of a definition of the term "medicine".[23] Not withstanding this, attempts have been made to permit the public to resort to practitioners of systems of treatment not embraced within the orthodox practice of medicine. This was achieved through the Drugless Practitioners Act (1925) and subsequent modifications and amendments made in 1944, 1952, and 1955. A drugless practitioner is defined as a person who practises:

---

[23] Ibid., III, 34-5.

> the treatment of any ailment, disease, defect or disability of the human body by manipulation, adjustment, manual or electro-therapy, or by any similar method.[24]

The Committee on the Healing Arts points out that "drugless therapists" are included, although they are defined under this Act as having a wider area of practice than this definition of Drugless Practitioners allows.

Originally the Act embraced five classifications: osteopaths, chiropractors, drugless therapists, masseurs, and chiropodists. In 1955, chiropodists were regulated by a separate Act, and physiotherapists were added as a new classification although, together with masseurs, they were given "minor" status, which meant that they could practise only on the prescription of a medical practitioner or of a practitioner registered in one of the "major" classifications of the Act. Each profession was governed by its own Board of Directors. Provisions were made for registration following an examination with annual renewal thereafter, for disciplinary powers, and for restriction of the use of the various occupational designations. The range of educational requirements demanded of the various professions embraced by the Act differed widely, from a one-year course for masseurs to six years of post-secondary education for osteopaths.

Osteopaths

> The main distinction between the modern osteopath and the modern physican [in the United States] is that the osteo-

---

[24] Loc. cit.

> path places greater emphasis on the use of manipulation and somewhat less emphasis on drugs than the physician... today the pre-professional academic requirements as well as the curricula of osteopathic schools are patterned largely after those of schools of medicine.[25]

In the U.S.A., osteopaths are recognized by the American Medical Association and in 42 states they enjoy the same privileges as physicians. In Ontario, however:

> osteopaths ... are permitted to apply only that part of their training which is not generally used in medical practice. Section 4 of the Ontario Drugless Practitioners Act prohibits osteopaths from prescribing and administering drugs internally or externally, using anaesthetics for any purpose, or practising surgery or midwifery. These prohibitions leave only manipulation of the musculoskeletal system as the main therapeutic procedure available to osteopaths.[26]

For these reasons, the number of osteopaths practising in Ontario is small, and is expected to decline unless the position changes. The recommendation of the Committee on the Healing Arts was that investigations should be made into the possibility of licensing individual osteopaths with suitable qualifications and experience as medical practitioners, but not to extend the scope of practice of those who do not meet the licensing requirements.[27]

There are no educational programmes for osteopaths in Ontario. Continuing education activities, however, are provided by the Ontario Osteopathic Association, as well as the national associations in Canada and the United States.

---

[25] Ibid., II, 445.

[26] Ibid., p. 449.

[27] Ibid., pp. 452, 455, 532-33.

Chiropractors

> The philosophy of chiropractic is based upon the premise that disease or abnormal function is caused by interference with nerve transmission and expression, due to deviation from their normal position, of the bony segments of the body, especially the vertebral column.[28]

Chiropractors believe that the body's own resources can restore their normal healthy functioning with the assistance of manipulation, which allows nerves and joints to function freely.[29] Chiropractors make careful examination of the spine and sometimes take x-rays in order to locate the area where the trouble originates. The Drugless Practitioners Act prohibits the use of drugs or surgery but permits the use of exercise, light, thermal, hydro- and electro-therapy. The Hypnosis Act prohibits the use of hypnotism.[30] Their right to diagnose is an area of dispute, although it has been upheld by the Ontario Supreme Court.[31]

The Committee on the Healing Arts expressed little confidence in the present methods by which chiropractors are trained and in their methods of treatment, because of the tendency to ignore most of the scientific knowledge about disease. However, the Committee also seemed convinced that the techniques of chiropractic have value, and that it would be in the public interest to definitively resolve the controversy

---

[28] Ibid., III, 457.

[29] Ibid., p. 458.

[30] Ibid., p. 461.

[31] Ibid., p. 464.

over the benefits of manipulative therapy, so that the chiropractor could practice within the limits of his profession with the approval of physicians and the public in general.[32] The Committee therefore made recommendations for bringing chiropractic education within the public domain, with the aim of eliminating the tendency towards isolation, and for enabling the public to consult chiropractors without prior medical referral but with a requirement that a differential diagnostic examination be performed by a physician before chiropractic treatment was begun.[33]

---

[32] Ibid., p. 469.

[33] Ibid., pp. 474-75.

APPENDIX B

UNION LIST OF PERIODICAL HOLDINGS IN THE 14 HOSPITAL LIBRARIES

PREFACE*

This union list documents the holdings of fourteen hospital libraries in the counties of Oxford, Middlesex and Elgin.[1] It is organized into two parts. The first part is a finding list with journals arranged alphabetically by title. It is expected that this part will receive the heaviest use, in response to hospital library patrons' requests. The second part is a listing of these same journals re-arranged into subject groupings. This part will be used by librarians, and has already been used by the project staff.

Most users, it is felt, will want to find out in which hospital library a specific title is located. To make this operation as efficient as possible, only the titles and holdings are given; in this way, the largest possible number of journals can be fitted on a page, and the faster becomes the operation of looking up the holdings of a particular journal. After each title in this section there follows a number (e.g. Clinical anesthesia. 0306.) which serves to direct the user to the corresponding journal in the second section.

---

* Genesh Bhattacharyya, a visiting professor at the School of Library Science who has devoted considerable time to both theoretical and practical considerations of union lists, gave useful suggestions to the project on the organization of this union list.

[1] For a list of the hospitals represented, see pp. 262-63.

As part of the survey of hospital resources, it was hoped to get some idea of each hospital's coverage of a specific area of the health sciences. Examination of subject coverage of monographs was not attempted. However, the second half of the union list, since it is organized by subject area, allows this examination to be made for periodical holdings. The strengths and weaknesses of individual hospital libraries will be discussed in the section immediately following the preface.

A second reason for making a listing by subjects was that such a listing would be extremely useful in an eventual co-operative acquisitions plan, from the point of view of balancing subject coverage and avoiding needless duplication of effort. It is stressed, however, that in no way is the list to be considered to represent recommended titles in any field. Such lists are already in existence.[2,3,4] Some clue to a journal's excellence is indicated in the second part of the list indirectly by the information given about whether or not it is indexed or abstracted. Every effort has been made to obtain complete indexing and abstracting information. Mistakes of omission will have been made rather than mistakes of inclusion.

---

[2] Alfred N. Brandon, "Selected List of Books and Journals for the Small Medical Library", Bulletin of the Medical Library Association, LVII (1969), 130-150.

[3] Thomas P. Fleming and Frederick G. Kilgour, "Moderately and Heavily Used Biomedical Journals", Bulletin of the Medical Library Association, LII (1964), 234-41.

[4] B.H. Robinow, Organization of Hospital Libraries (Toronto: Canadian Hospital Association, 1967).

Ideally perhaps, an original subject heading list appropriate to the collections being summarized might have been compiled. However, this would have necessitated inspecting each journal individually, and time was not available. It was decided, therefore, to adapt as a subject heading list that used by Ulrich's International Periodicals Directory[5] and Irregular Serials and Annuals.[6] Alternatively, Index Medicus might have been used; however, the collection to be classified was a heterogeneous one covering many categories of subjects and having few journals in each category. Furthermore, it included many fairly obscure Canadian periodicals which are not indexed by Index Medicus, but which are included in Ulrich's. Indeed, as it turned out, more than 95% of the collection of journals in the hospital libraries of the Study Region were found in Ulrich's, but only 67% of them are included in Index Medicus. Since the headings used in Ulrich's are not geared specifically to the needs of small hospital libraries, they are not ideal for the purposes of this union list. Consequently, the headings have been altered in some cases; for instance, where there were few entries under near-synonymous headings, these headings were merged to obtain a larger grouping. The

---

[5] Ulrich's International Periodicals Directory (14th ed.; New York: Bowker, 1971-72).

[6] Irregular Serials & Annuals (2nd ed.; New York: Bowker, 1972).

deviations from Ulrich's headings are discussed in the section that explains how to use the union list.

We would like to thank Anne Seheult, Eva Borda, and Agnes Kutaş from the Health Sciences Library at the University of Western Ontario for their valuable help and advice.

BRIEF DESCRIPTION OF CONTENTS

The two parts of the union list reference the same 504 journals. In the second part, each journal is assigned to only one subject heading. To counterbalance the arbitrariness of classification that such a decision implies, many "see" and "see also" references have been used. Although the recording of holdings is the main purpose of the first part of the list, this information is repeated in the second part for the convenience of users and in order to make an analysis of subject coverage possible.

A given journal is often subscribed to by only one library. This is true in the case of almost half of the journals. This means, for one thing, that the need to pool resources is great. It also means that the union list is very useful. For instance, if Library A is thinking of subscribing to one of these journals, it could talk to Library D, the only library in the region that subscribes to this journal, and ask about it - whether or not it is heavily used, and what are the opinions of a particular group of health professionals about it.

In order to make a qualitative, as well as a quantitative, analysis of the subject strengths and weaknesses in the hospital libraries' collections of periodicals, the second part of the union list was separated into the following

categories:

(1) periodicals indexed in Index Medicus, plus all periodicals under the indexing and abstracting heading, plus Index Medicus itself (this category represents 67.9% of the total number of periodicals)

(2) periodicals indexed in Index Medicus, but which no library is receiving currently (4.6% of total)

(3) periodicals indexed somewhere (e.g. Canadian Journal of Behavioral Science, indexed in Psychological Abstracts), but not in Index Medicus (7.7% of total)

(4) periodicals not indexed anywhere (19.8% of total)

The analysis was made on the basis of the first category only (i.e. all periodicals currently being subscribed to by one or more of the hospital libraries which are indexed in Index Medicus). Table 1 shows the number of periodicals in each subject grouping which are held by each hospital library. It can be readily seen that the first four hospital libraries, St. Joseph's, Victoria, C.P.R.I., and Westminster, have much stronger collections than any of the other libraries, both from the point of view of breadth of subject coverage and from the number of periodicals subscribed to (see also Table 6, p. 166).

Most of the hospital libraries have at least some holdings in the subjects "Abstracting & Indexing", "Medical Sciences - General" and "Nursing", but some of the subjects are not covered well at all, such as "Sociology", "Rehabilitation", "Physiotherapy", "Obstetrics & Gynecology", "Mental Retardation", "Lab Technique", and "Dentistry". The libraries of

the country hospitals have so few journal holdings at all that it is not even possible to speak in terms of their subject strengths and weaknesses.

TABLE 1

Analysis by Subject of the Hospital Libraries' Collections

	Abstracting & Indexing 23	Allergies 3	Anaesthesia 7	Arthritis & Rheumatism 4	Biological Sciences 24	Cancer 4	Cardiology 5	Chemistry 13	Children & Youth 2	Circulatory System 2	Dentistry 2	Dermatology 4	Diabetes 2	Digestive System 7	Education 3	Endocrinology 4	Gerontology 2	Haematology 2	Health 4	Hospitals 6	Immunology 2	Internal Medicine 10	Lab Technique 4	Medical Sciences - General 30	Medical Sciences - Special 8
St. Joseph's	14	2	7		17	2	4	5	2	1			2	2	2	2		2	2	6	1	5	1	19	5
Victoria	10	2	3	4	7	3	3	6				3	1	6	2	4	2	2	2	2	2	9	3	21	5
C.P.R.I.	7				9			5	2						1	1			2	3		1		13	1
Westminster	7		5	2		2	1	1		1		2		1			1	1		4		6		10	
London Psychiatric	4				1						2								1	2		1		3	
St. Thomas Psychiatric	2																1		1					3	
Oxford Mental Health	2																1			2		2		2	
Strathroy-Middlesex						1														4			1	5	1
St. Mary's	1											1								4				2	
St. Thomas-Elgin	2	1				2																1		3	
Woodstock General	3					1	1							1										3	
Four Counties																				4					
Tillsonburg	2		1			1																		2	
Alexandra																								4	

The number after the subject heading represents the number of journals indexed in Index Medicus under that heading.

Every journal in the Abstracting & Indexing heading is included, whether or not it was indexed in Index Medicus, as is Index Medicus itself.

TABLE 1 (cont.)

Analysis by Subject of the Hospital Libraries' Collections

	Mental Retardation 2	Neurology 15	Nuclear Medicine 1	Nursing 8	Nutrition & Dietetics 4	Obstetrics & Gynecology 5	Occupational Therapy 2	Ophthalmology & Optometry 4	Otorhinolaryngology 3	Pathology 6	Pediatrics 11	Pharmacy & Pharmacology 10	Photography 1	Physiotherapy 2	Plastic Surgery 3	Psychiatry 36	Psychology 22	Radiology 8	Rehabilitation 2	Science 5	Sociology 6	Speech & Hearing 2	Surgery 14	Urology 3
St. Joseph's		6	1	7	2	5	1	4	3	4	7	7	1	2	1	6	2	7		4		2	10	3
Victoria		9			1	4		1		5	7	2			3	4		1		4		2	10	
C.P.R.I.	2	10		4	4		1			2	9	1		1		16	13			3	5	2		
Westminster		3		4	1			1	1	4		2				3	3	4	2	2			8	1
London Psychiatric		1		4	1		2			1	1	2				15	11			2	1			
St. Thomas Psychiatric	1	2										2				11	13			1			1	
Oxford Mental Health	1	2			1		1					1				6	3			1				
Strathroy-Middlesex				1						1		2		1				1					2	
St. Mary's				2																				
St. Thomas-Elgin				2		2					1	1											1	
Woodstock General																		2						
Four Counties				3																				
Tillsonburg											1												1	
Alexandra				3						1														

The number after the subject heading represents the number of journals indexed in Index Medicus under that heading.

NOTE TO USERS

The union list consists of two parts: the first part is an alphabetical listing by title of approximately 504 journals and the second is a subject-arranged listing of the same 504 journals. In the first part, titles are entered as in the Union List of Scientific Serials in Canadian Libraries, i.e. journals, bulletins, annals, and proceedings of particular societies and associations are listed under the names of the societies or associations (e.g. Canadian medical association. Journal. and Royal college of physicians and surgeons of Canada. Annals.) Subtitles are included only when they are necessary to clarify the titles (e.g. C.A. A cancer journal for clinicians.) and publishers are given only to distinguish between journals with identical titles or, again, to help clarify titles. Former titles are usually given only if holdings are listed for the years in which these titles were used.

In order to find publication information for a known journal, it is necessary to look up the title of the journal in the alphabetical list. There a number has been assigned (e.g. American journal of epidemology. 2702.) which locates the same journal in the subject-arranged list, the second part of the union list. The first two digits of the number describe the heading (27 = MEDICAL SCIENCES - Special, 44 = PSYCHOLOGY) and the last two digits describe the journal

itself (02 means that the American Journal of Epidemology is the second journal under the subject heading MEDICAL SCIENCES - Special). It was designed in this way so that when the union list is revised, additional journals may be inserted at the end of a subject group without the necessity of re-arranging the entire numbering system.

The main information given for each journal in this second list includes the year the journal began publication, the frequency and place of publication, and information about indexing and abstracting. In addition, indications are given when a journal is available in microform, when it is free, when it has an unusual format (tape casettes, tabloid, etc.), or when it has changed titles. This information was obtained from Ulrich's International Periodicals Directory and from Irregular Serials & Annuals except in the case of the 20 journals which were not found in either of these two sources. Publication information for these was obtained from other sources and from an inspection of some of the journals themselves. Holdings are given in the subject-arranged list which are exactly the same as in the first list.

In the subject-arranged list, each journal is entered in only one subject category. The categories used are those assigned to the journals by Ulrich's. An attempt was made to keep Ulrich's headings and follow them as closely as possible. However, the following deviations from Ulrich's

classification were made:

(1) Where there was the main heading MEDICAL SCIENCES with subheadings like "Circulatory System", "Dentistry", "Hematology", "Neurology", and so on, these subheadings were used as main headings.

(2) Where there was the main heading MEDICAL SCIENCES with subheadings resembling other main headings, the two headings were merged (e.g. MEDICAL SCIENCES - Laboratory Technique was incorporated into LABORATORY TECHNIQUE, and MEDICAL SCIENCES - Study and Teaching was incorporated into EDUCATION.

(3) Headings that were near synonyms were merged (e.g. EAR, NOSE AND THROAT was incorporated into OTORHINOLARYNGOLOGY) and other similar changes were made (e.g. BIOLOGY incorporated into BIOLOGICAL SCIENCES; HOSPITAL ADMINISTRATION into HOSPITALS; SOCIAL SCIENCES into SOCIOLOGY; and GYNECOLOGY AND OBSTETRICS into OBSTETRICS AND GYNECOLOGY).

(4) Sixteen of the journals were assigned by Ulrich's to very specialized subject areas, so that each of these sixteen subject headings included only one journal (e.g. ATHEROSCLEROSIS, AUDIOLOGY, EPIDEMOLOGY, METABOLISM, ORTHOPEDICS, and PHYSICS). All of these journals were classed together under the main heading MEDICAL SCIENCES - Special.

"See" and "see also" references have been used to compensate for the deletion of headings and their combining with other categories. It was felt that it was unnecessary to indicate these types of deviations from Ulrich's other than in this way. Any other changes made, however, have been marked on the individual journal entries with an asterisk and include the following cases. Seventy-three of the journals held by the libraries in the Study Region had been given the heading MEDICAL SCIENCES - General. Twenty-one of these have been re-assigned to more specific headings. Another group of

about twenty journals which were not listed in Ulrich's were assigned to various headings with the help of Mrs. Eva Borda, one of the medical librarians at the Health Sciences Library at the University of Western Ontario.

The headings finally decided upon are the following:

Abstracting and Indexing Services
Allergies
Anaesthesia
Arthritis and Rheumatism
Biological Sciences
Business and Industry
Cancer
Cardiology
Chemistry
Children and Youth
Circulatory System
Dentistry
Dermatology
Diabetes
Digestive System
Education
Endocrinology
Food and Food Industries
Gerontology
Haematology
Health
Hospitals
Immunology
Internal Medicine
Laboratory Technique
Medical Sciences - General
Medical Sciences - Special
Mental Retardation
Neurology
Nuclear Medicine
Nurses and Nursing
Nutrition and Dietetics
Obstetrics and Gynecology
Occupational Therapy
Ophthalmology and Optometry
Otorhinolaryngology
Pathology
Pediatrics
Pharmacy and Pharmacology
Photography
Physiotherapy
Plastic Surgery
Psychiatry
Psychology
Radiology
Rehabilitation
Science
Sociology
Speech and Hearing Disorders
Surgery
Urology

Abbreviations and Symbols

[ ]	incomplete holdings
-	holdings continue to date
.	end of holdings
yr.	year
v.	volume
n.s.	new series
circ.	circulation
current	library subscribes to journal but does not keep back issues
m.	monthly
b-m.	every two months
s-m.	twice monthly
q.	quarterly
s-a.	twice annually
a.	annual
w.	weekly
b-w.	every two weeks
i.	irregular

LSJ St. Joseph's Hospital, London 439-3271
Medical Library, Mrs. Bernice Rowcliffe

LVM Victoria Hospital, London 432-5241 Ext. 356
Hospital Medical Reading Room, Mrs. Edith Logis

LVS Victoria Hospital, London (as above)
Stevenson Medical Library

LCP Children's Psychiatric Research Institute, London 471-2540
Library, Mrs. Asta Hansen

LLP London Psychiatric Hospital 455-5110 Ext. 346
Staff Reference Library, Mrs. Catherine Barr

LWH Westminster Hospital, London 432-6711
Medical Library, Miss Edith Atkins

LSM St. Mary's Hospital, London 438-6185
Medical Library, Sister St. Anthony

NFC Four Counties General Hospital, Newbury 693-4441
Medical Collection, Mrs. G. Anderson

SMG Strathroy-Middlesex General Hospital 245-1550
Medical Library, Mrs. Margaret Blais

STEG St. Thomas-Elgin General Hospital 631-2020
Medical Library, Miss Anne-Marie Talgyes

STPH St. Thomas Psychiatric Hospital 631-8510
Medical Library, Miss Anne McCartney

WOM Oxford Mental Health Centre, Woodstock 539-1251
Medical Library, Miss Gayleen Brown

WWG Woodstock General Hospital 537-5511
Medical Staff Library, Miss Mae Osman

TTD Tillsonburg District Memorial Hospital 843-3611
Medical Library, Miss Anne Jennings

IAG Alexandra Hospital, Ingersoll 485-1700
Medical Collection, Dr. J. Lawson

A.S. & T.Ind. - Applied Science & Technology Index
Abstr.Hosp.Manage.Stud. - Abstracts of Hospital Management Studies
Abstr.Soc.Work - Abstracts for Social Workers
Abstr.World Med. - Abstracts of World Medicine
Amer.Hist. & Life - America: History & Life
Aus.Sci.Ind. - Australian Science Index
Biol.Abstr. - Biological Abstracts
Biol. & Agri.Ind. - Biological & Agricultural Index
Bk.Rev.Ind. - Book Review Index
Br.Educ.Ind. - British Education Index
Br.Hum.Ind. - British Humanities Index
Br.Tech.Ind. - British Technology Index
C.I.J.E. - Current Index to Journals in Education
C.I.N.L. - Cumulative Index to Nursing Literature
Can.Ind. - Canadian Periodical Index
Cath.Ind. - Catholic Periodical & Literature Index
Chem.Abstr. - Chemical Abstracts
Child Devel.Abstr. - Child Development Abstracts
Coll.Stud.Pers.Abstr. - College Student Personnel Abstracts
Curr.Cont. - Current Contents
DSH Abstr. - DSH Abstracts
Dent.Ind. - Dental Abstracts
Eng.Ind. - Engineering Index
Except.Child Educ.Abstr. - Exceptional Child Education Abstracts
Excerp.Med. - Excerpta Medica
Hosp.Abstr. - Hospital Abstracts
Hosp.Abstr.Serv. - Hospital Abstracts Service
Hosp.Lit.Ind. - Hospital Literature Index
I.P.A. - International Pharmaceutical Abstracts
Ind.Chem. - Current Abstracts of Chemistry and Index Chemicus
Ind.Med. - Index Medicus
Int.Nurs.Ind. - International Nursing Index

JAMA - American Medical Association. Journal.
Lang.& Lang.Behav.Abstr. - Language & Language Behavior Abstracts
Lib.Lit. - Library Literature
Lib.Sci.Abstr. - Library Science Abstracts
Math.R. - Mathematical Reviews
Ment.Retard.Abstr. - Mental Retardation Abstracts
Met.Abstr. - Metal Abstracts
Meteor.& Geoastrophys.Abstr. - Meteorological & Geoastrophysical Abstracts
Nucl.Sci.Abstr. - Nuclear Science Abstracts
Nutr.Abstr. - Nutrition Abstracts & Reviews
P.A.I.S. - Public Affairs Information Service
Percept.Cognit.Devel. - Perceptual-Cognitive Development
Photo.Abstr. - Photographic Abstracts
Psychol.Abstr. - Psychological Abstracts
RAPRA - Rubber & Plastics Research Association of Great Britain
R.G. - Readers' Guide to Periodical Literature
Rehabil.Lit. - Rehabilitation Literature
Rel. & Theol.Abstr. - Religious & Theological Abstracts
Rel.Per. - Index to Religious Periodical Literature
Sci.Abstr. - Science Abstracts
Sci.Cit.Ind. - Science Citation Index
Soc.Sci.& Hum.Ind. - Social Sciences & Humanities Index
Sociol.Abstr. - Sociological Abstracts
Sociol.Educ.Abstr. - Sociology of Education Abstracts

A

Abstracts for social workers. 0101.
LCP 5-

Abstracts of current literature on venereal disease.
see Current literature on venereal disease. Abstracts and bibliography.

Abstracts of hospital management studies. 2201.
LSJ v.3'66-'67, 1971.

Abstracts of world medicine. 0102.
LSJ [31]-32-[33-35]-36-37-[38]-1971.
LVM 44.
LCP 35-42.

Abstracts on hygiene. 0103.
LSJ 36-44.

Academic therapy. 1601.
LCP 5-

Academy of medicine, Toronto. Bulletin. 2601.
LLP [41-45]-

Acta cytologica. 0501.
LSJ 10-

Acta endocrinologica. 1701.
LVS 45-

Acta haematologica. 2001.
LSJ 35-47.

Acta neuropathologica. 2901.
LCP 15-

Acta obstetrica et gynecologica scandinavica. 3301.
LSJ 46-

Acta paediatrica scandinavica. 3801.
LSJ 60-
LCP 56-
LLP 56-
- Supplement.
LSJ no. 205-

Acta physiologica scandinavica. 0502.
LSJ 84-
- Supplement.
LSJ 371-

Acta psychiatrica scandinavica. 4301.
LCP 43-
- Supplement.
LCP 195-

Acta psychologica. 4401.
LLP 36-

Acta radiologica. Diagnosis. 4501.
LSJ 49-58. n.s. 1, 7-

Acta radiologica. Therapy, physics, biology. 4502.
LSJ 49-58. n.s. 1, 7-

Addictions. 2701.
LSJ 15-
LLP [13-14]-15-
SMG 19-

Administrative digest. 0601.
SMG 1972-

Adolescence. 1001.
LCP 1-
LLP 6-
WOM [6]-

Advances in cancer research. 0701.
LVS 8-

Advances in child development and behavior. 4402.
LCP 1, 4-

Advances in clinical chemistry. 0503.
LSJ 1-8, 10-
LVS 7-
LCP 1-7, 9-

Advances in enzymology and related areas of molecular biology. 0504.
LVS 26-

Advances in immunology. 3901.
LSJ 10-

Advances in internal medicine. 2401.
LVS [1-13]-

Advances in lipid research. 0901.
LCP 3-[4]-5, 7-

Advances in metabolic disorders. 0902.
LCP 1.

Advances in pediatrics. 3802.
LVS 7-
LCP 12-13, 15, 17-

Advances in protein chemistry. 0903.
LVS 18-

Advances in teratology. 0505.
LCP 1.

Albert Einstein medical center, Philadelphia. Journal. 2602.
LWH 7-

American academy of child psychiatry, N.Y. Journal. 4302.
LCP 2-6, 8-
STPH 9-

American academy of medical administration. AAMA Executive. 2202.
LLP 11-

American college of surgeons. Bulletin. 5001.
LSJ [50]-51-
LWH 46-53-[54-55]-56-
SMG 57-
STEG 57-
WWG 52-

American dental association. Journal. 1201.
LLP 82-

American dietetic association. Journal. 3201.
LSJ 50-
LCP 46-47,51-
LLP 58-
LWH 30-
WOM 35-

American geriatrics society. Journal. 1901.
LVM current
STPH 1970-

American heart journal. 0801.
LSJ 81-
LVM 81-
LVS 65-
LWH 36-
WWG 1973-

American journal of cardiology. 0802.
LSJ 27-
LVM 25-
LVS 11-

American journal of clinical nutrition. 3202.
LSJ 23-
LCP 18-

American journal of clinical pathology. 3701.
LSJ 35-
LVM current
LVS 31-
LWH 43-45, 47-54.
IAG 43-

American journal of digestive diseases. 1501.
LVM current

American journal of diseases of children. 3803.
LSJ 107-110-[111]-112-
LVS 49-
LCP 99-

American journal of EEG technology. 2902.
LSJ 7-
LCP 1-

American journal of epidemology. 2702.
LSJ 96-

American journal of gastroenterology. 1502.
LVM current

American journal of hospital pharmacy. 3902.
LSJ 20-
SMG 1972-
STPH 1969-

American journal of the medical sciences. 2603.
LSJ 255-
LVM 259-260.
LVS 247-

American journal of medical technology. 2501.
LVS 30-

American journal of medicine. 2402.

LSJ [30-34]-40-
LVM 44-45,47-49,51-

LVS 15-
LWH 20-
STEG 30-35,39, 40-45, 48-
WOM 23-29,42-

American journal of mental deficiency. 2801.
LCP 64-
STPH 75-

American journal of nursing. 3101.
LSJ 68-
LCP 61-65, 67-
LLP [57-65]-66-[67]-68-
LWH 58-
LSM current
NFC [65]-68-
SMG 63-
IAG 62-

American journal of obstetrics and gynecology. 3302.
LSJ 79-80, 82-85-[86]-87-
LVM current
LVS 75-

American journal of occupational therapy. 3401.
LCP 24-
LLP 25-
WOM 26-

American journal of ophthalmology. 3501.
LSJ 61-

American journal of orthopsychiatry. 4303.
LSJ 36-
LCP 30, 32-33, 35, 37-
LLP [31]-34-
STPH 40-
WOM 42-

American journal of pathology. 3702.
LSJ 44-
LVS 34-
LCP 46-50, 52-58, 60-
LWH 26-

American journal of pharmacy. 3903.
LSJ 138-

American journal of proctology. 1503.
STEG 18-19.
WWG 18-

American journal of psychiatry. 4304.

LSJ 117-121-[122]-
LVS 117-
LCP 116-
LLP [94-101]-[105-125]-126-
LWH 117-126.
STPH 126-
WOM 98-114-[117]-120-121, 124-

American journal of psychoanalysis. 4305.
LCP 20-22, 25-

American journal of psychotherapy. 4306.
LCP 19.

American journal of roentgenology, radium therapy and nuclear medicine. 4503.
LSJ 85-90, 96-
LWH 54-

American journal of surgery. 5002.
LSJ [111]-112-[113-114]-

American medical association. Journal. JAMA. 0104.
LSJ [166-187]-188-190-[191-192]-
LVM 215-
LVS 116-
LCP 173-
LLP [196-208]-211-
LWH 139-141, 145-
LSM current
STEG 215-
STPH 211-
WOM 191-
WWG 203-
TTD 203-

American physical therapy association. Journal. see Physical therapy.

American psychologist. 4403.
LCP 16-
LLP [5-11]-12-16-[17]-18-
STPH 24-

American review of respiratory disease. 2403.
LVS 87-
LVM 103-105.
WOM 84-90, 94.

American review of tuberculosis. 2403.
WOM 44-54.

American sociological review. 4801.
LCP 29-30, 32-34, 36-

American sociologist. 4802.
LCP 3-

American surgeon. 5003.
LVM current

Anaesthesia. 0301.
LSJ 26-
LVM current
LWH 10-

Analytical biochemistry. 0904.
LSJ 51-
LCP 18-25, 27-30, 33-44, 46-
LWH 1-25, 27-28.

Analytical chemistry. 0905.
LSJ 35, 37-41.

Anesthesia and analgesia. Current researches. 0302.
LSJ 50-
LWH 36-59.

Anesthesiology. 0303.
LSJ [23-24, 26]-
LVM current
LWH 18-
STEG 31-[32-33]-34-
TTD 32-

Annales de génétique. 0506.
LCP 10-

Annals of human genetics. 0507.
LCP 25.

Annals of internal medicine. 2404.
LSJ 54-
LVM 64-
LVS 31-
LCP 53-60, 65-
LWH 27-
WOM 36-42, 68-

Annals of otology, rhinology and laryngology. 3601.
LSJ [70-72]-73-[74]-